REPORT RESUMES

ED 003 532 56

A STUDY OF THE EFFECTIVENESS OF AUDIOVISUAL TEACHING MATERIALS WHEN PREPARED ACCORDING TO THE PRINCIPLES OF MOTIVATIONAL RESEARCH.

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REPORT NUMBER NDEA-VIIA-221 PUB DATE 30 JUN 63

GRANT OEG-735055-00-11

EDRS PRICE MF-$0.36 HC-$8.92 223P.

DESCRIPTORS- *AUDIOVISUAL AIDS, MOTIVATION, RESEARCH, *FILMS, *INSTRUCTIONAL MATERIALS, *STUDENT MOTIVATION, *CHANGING ATTITUDES, HIGH SCHOOL STUDENTS, STUDENT ATTITUDES, MONMOUTH, OREGON, LIKERT TYPE ATTITUDE INVENTORY

THE OBJECTIVE WAS TO DETERMINE IF AUDIOVISUAL MATERIALS PRODUCED WITH A KNOWLEDGE OF LEARNER'S MOTIVES (MOTIVATION RESEARCH) WERE MORE EFFECTIVE IN CHANGING ATTITUDES AMONG THOSE FOR WHOM THE MATERIALS ARE INTENDED THAN AMONG INDIVIDUALS IN GENERAL. RESPONSES OF 1,052 HIGH SCHOOL STUDENTS WERE ANALYZED (ANALYSIS OF VARIANCE MULTIPLE CLASSIFICATION) AND GROUPED (Q TECHNIQUE) WITH ACADEMIC ABILITY AND PLANS FOR POST-HIGH SCHOOL EDUCATION SERVING AS CRITERIA FOR CLASSIFICATION. TWO EXPERIMENTAL MOTION PICTURES WERE PRODUCED. TWO EQUIVALENT FORMS OF LIKERT-TYPE ATTITUDE INVENTORY WERE DEVELOPED AND VALIDATED. AN EIGHT-GROUP EXPERIMENTAL DESIGN WAS EMPLOYED IN ASSESSING THE FILMS. INDIVIDUALS WERE TESTED (3,431) FOR CONGRUENT AND INCONGRUENT MOTIVATIONAL PATTERNS WITH THE FILMS RANDOMLY ASSIGNED TO "BEFORE-AFTER" AND "AFTER" ONLY EXPERIMENTAL AND CONTROL GROUPS. SCORES ON CRITERION INSTRUMENTS WERE CLASSIFIED BY MOTIVATIONAL PATTERN, SEX, AND TEST FORM. DATA WERE TREATED BY ANALYSIS OF VARIANCE MULTIPLE CLASSIFICATION TECHNIQUES. IT WAS CONCLUDED THAT TECHNIQUES EMPLOYED BY BEHAVIORAL SCIENTISTS CAN MAKE SIGNIFICANT CONTRIBUTION TO THE DEVELOPMENT OF MORE EFFECTIVE INSTRUCTIONAL MATERIALS AT TWO POINTS - FIRST, IN THE ANALYSIS OF CHARACTERISTICS OF LEARNER TO ASSIST IN STRUCTURING THE CONTENT OF MATERIALS, AND SECOND, IN EMPIRICALLY TESTING MATERIALS TO DETERMINE THEIR PSYCHOLOGICAL VALIDITY. (HB)

ED003532

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Final Report
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teaching
research

OREGON STATE SYSTEM OF HIGHER EDUCATION

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June 30, 1963

TEACHING RESEARCH
Oregon State System of Higher Education
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The Research Reported Herein was
Supported by a Grant from the
U. S. Department of Health, Education and Welfare
Office of Education

ACKNOWLEDGMENTS

A study of the magnitude of the one described in this report requires cooperation and participation from many individuals and agencies. The project research director wishes to express special appreciation to:

Dr. Walter E. Snyder, Dean of Instruction, Oregon College of Education, who under the title of project director coordinated all administrative matters including relationships with eleven participating public school districts, and who provided continuing council and advice during all phases of the project.

The administrative and teaching personnel from senior high schools in the following Oregon school districts: Central of Monmouth-Independence, Clackamas, Corvallis, Dallas, Harrisburg, Lebanon, Milwaukee, Monroe, North Salem, Philomath and Woodburn.

Dr. Robert C. Wilson and Dr. Lester Beck, Portland State College, Dr. Roy Lieuallen and Dr. David Brody, Oregon College of Education; Dr. James Sherburn, Division of Continuing Education, Oregon State System of Higher Education and Dr. Bert Kersh, Teaching Research, Oregon State System of Higher Education, for assistance in planning and organizing the project.

Dr. Curtis Reid and William C. Rush, Audio-Visual Services, Educational Media Division of Continuing Education, Oregon State System of Higher Education, and Mr. Paul Bartel, U.C.L.A., for filming and editing the experimental motion pictures employed in the study.

Dr. Francis B. Nickerson, Executive Secretary, High School-College Relations Committee, Oregon State System of Higher Education; Mr. Jack D. Morton and Dr. John E. Bellamy, Oregon College of Education and Dr. John P. Driscoll, U.C.L.A., for assistance in preparing the scripts for the experimental films.

Dr. James Beaird and Mr. Donald Toevs, Teaching Research, Oregon State System of Higher Education; Dr. Paul Hood, Human Resources Research Office, George Washington University; Dr. J. Spencer Carlson, University of Oregon and the Statistics Department, Oregon State University, for assistance in treatment of data and statistical services.

Mr. Ellis Stebbins and Mr. John Sparks, Oregon College of Education, for preparation and submission of fiscal reports.

Mrs. Lorraine Amerman and Mrs. Barbara Hamilton for typing the final report and preparing the many figures and tables.

The thousands of high school students who each devoted several hours conscientiously answering questionnaires, taking tests, viewing experimental films and completing attitude inventories.

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ABSTRACT

Edling, Jack V.

A Study of the Effectiveness of Audio-Visual Teaching Materials When Prepared According to the Principles of Motivational Research.
Monmouth, Oregon, TEACHING RESEARCH, Oregon State System of Higher Education; June, 1963. 213 p. (USOE Title VII Project No. 211)

Purpose: The principal objective of the study was to determine if audio-visual materials produced with a knowledge of learner's motives (motivation research) are more effective in changing attitudes among those for whom the materials are intended than among individuals in general. Several secondary objectives relating to measurement and methodology were involved.

Procedure Method: Motives (desires) were operationally (behaviorally) defined in terms of responses to existing psychological instruments. The responses of 1,052 high school students were analyzed (analysis of variance - multiple classification) and grouped (Q-technique) with academic ability and plans for post-high school education serving as criteria for classification. Large differences in learner responses by sex, plus the requirements of the research design, dictated the production of two experimental motion pictures, each intended to modify attitudes toward post-high school education. Two equivalent forms of a Likert-type attitude inventory were developed. A validation study of these criterion instruments was conducted. An eight group experimental design was employed in assessing the effects of the films. Three thousand four hundred and thirty-one individuals whose motivational patterns were congruent and incongruent with the films were randomly assigned to "before - after" and "after - only" experimental and control groups. Scores on criterion instruments were classified by motivational pattern, sex, and test form. Data were treated by analysis of variance - multiple classification techniques.

Results: Gross analyses (not motivational comparisons, but over-all film effects) revealed that for all individuals in pretested experimental groups mean post-test scores averaged approximately two points higher than mean pretest scores. Mean post-test scores for all individuals in pretested control groups averaged approximately one and one-third points lower than mean pretest scores. These differences were not statistically significant at the 5 % level of confidence. (2) Mean post-film scores for all individuals in experimental groups which were not pretested averaged approximately four points higher on mean post-film scores than on inferred mean pretest scores. These differences were statistically significant at the 1 % level of confidence. It was concluded that, unlike pretesting in the cognitive domain which usually enhances post-test scores, pretesting in the affective domain appears to significantly depress post-test scores.
(3) In the principal comparison between congruent and incongruent

groups (when matched on pretest scores) the mean post-test scores for congruent groups averaged approximately 18.4 points higher than mean post-test scores for incongruent groups. These differences were statistically significant at the 1 % level of confidence. (4) The mean post-test scores for congruent "before - after" groups averaged approximately 130 points. The mean post-film scores for congruent "after - only" groups averaged approximately 138 points. (5) When films were reversed among congruent groups, i.e., the film intended for boys analyzed for effects on congruent girls, etc., large and statistically significant differences in post-treatment scores between congruent and incongruent "after - only" groups were found. Analysis of film content revealed that the "reversed" messages would logically appeal strongly to the motivational patterns selected. This finding is most significant in that it appears that it is not the logical relevancy of the message to the motivational pattern of the learner as perceived by the communicator, but rather the relevancy of the message to the motivational pattern of the learner as perceived by the learner that is crucial in developing more effective audiovisual materials intended to modify attitudes. (6) It was concluded that techniques employed by behavioral scientists can make a significant contribution to the development of more effective instructional materials at two points. First, in the analysis of characteristics of learners to assist in structuring the content of materials, and second, in empirically testing materials to determine their psychological validity.

Section I

Introduction

If feasible instructional techniques were known for changing certain kinds of attitudes[*], those techniques would be of inestimable educational and social value. Types of attitudes requiring modification are those which have been formed without knowledge of, or with disregard for, relevant facts[**] and which persist even when those relevant facts become known.

There is considerable lay fear that if effective techniques for attitude modification were available they could be used for evil or undesirable control of humans as well as for more desirable purposes such as the elimination of racial prejudice or bigotry. Those who believe in the concept of free will state that the very nature of man precludes the development of systematic techniques to modify attitudes. The first fear, as has often been stated, is fundamentally one which relates to use and control of knowledge and not to knowledge itself. It is comparable to the issue raised with the technology relating to nuclear fission. The methodology which produced fission is socially neutral. The uses to which the technology is put is a political matter, yet, of great importance to some scientists who assume a large share of the responsibility for new technological developments.

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[*] Attitudes in general behavior theory are viewed as internalized anticipatory approach or avoidance tendencies toward objects (23), but they are defined herein as an individual's inclination or tendency to feel either positive or negative in any degree toward any physical or psychological object in a specific situation. An object conceivably may represent the extent to which an individual is for or against a course of action in relation to another object (8). Physical objects include all animate and inanimate things perceived or perceivable by man. Psychological objects include any subjective idea or thought; therefore, when combined with physical objects, they represent man's total perceptual capacity.

[**] The concept of "fact" refers to those objects or events on which there is a consensus (under specified conditions) among experienced observers. For example, practically all physicists agree that certain observable, reproducable and measureable phenomena occur - such as reflection and refraction of light. Reflection and refraction are considered facts because consensus under the required conditions prevails. In contrast, there may be agreement among selected physicists on an explanation, or theory, of the basic nature of light, but this theory is not considered a fact because even those selected physicists who might agree on the completeness, or factualness, of a given theory would concede that there is no consensus among qualified physicists on the theory explaining the basic nature of light. If you were reading this definition aloud to a group, it would be a fact that you were speaking, but the definition, itself, would not necessarily be a fact.

While there is anecdotal evidence to support almost any viewpoint, the opinion that it is impossible to control man's behavior through psychological means is not supported by sufficient experimental evidence to establish the fact. It would appear that in a rapidly changing society a methodology to modify prejudiced attitudes is essential if the natural processes of attitude change are too slow to assure the continued existence of the society. It is conceivable that any new knowledge may be used for socially undesirable purposes, and that any scientific effort may be unsuccessful. Attitude modification techniques are no exception, but the potential usefulness of such techniques dictates that the fear of negative applications, or the belief that no such technique is possible, should probably not be the criterion to guide scientific investigation.

Objectives of the Study

This research is essentially an investigation of the contribution which existing products from the behavioral sciences make to improve the effectiveness of instructional materials which are intended to modify attitudes.

Attitudes are thought to be learned in various ways (2). One way which is extremely relevant to educational requirements is sometimes called persuasion (1, 24). Here, in essence, some change agent (30), partially through verbal or visual symbols, apparently establishes an association in a learner's mind between an object (toward which a change in attitude is desired) and a referent* object toward which an existing attitude is more strongly held, with the result that a change in attitude occurs toward the intended object. For example, an insurance agent through words and pictures may establish a positive association between buying insurance (which was a neutral or negative object) and children (toward whom the parent has an established positive attitude). As a result of the new association, the attitude toward buying insurance is changed from neutral, or negative, to positive. In like manner, persuasion can be used, apparently, to establish a negative association between some object which is positively regarded and a referent object toward which a negative attitude had previously been well learned. For example, a politician may establish a negative association between supporting public education (which was a neutral or positive object) and paying taxes (toward which the taxpayer has an established negative attitude). As a result of the new association, the attitude toward supporting public education is changed from neutral, or positive, to negative. In the commercial field, advertising agencies have attempted to ascertain, in a systematic manner, objects toward which pervasive positive or negative attitudes are held by target populations in order to attempt to prepare messages for the mass media which would establish an association between products to be sold and existing, well-established attitudes (34). This procedure, conceivably, could be much more effective and efficient than traditional procedures utilizing salesmen who would attempt (not always successfully) to establish the necessary associations on a personal basis with each buyer. The process of determining pervasive attitudes for commercial purposes has often been called motivation research or simply M-R.

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* Referent attitudes may be thought of as existing values (importance rating of an object) for present purposes. The essential idea being that the referent attitude is the attitude most strongly held in any comparison.

Basic M-R principles, relating (1) to identification of objects toward which strongly held attitudes exist, (2) the association of those objects with other objects toward which attitude change is desired, and (3) determining attitude changes resulting from specific mass media messages, when applied to objects of broad, social concern conceivably could lead to informational and instructional techniques which are more effective and efficient than those presently used.

This project does not have as its purpose the development of techniques or instruments to identify attitudes which are widely and strongly held in a given population, but rather will attempt to utilize existing products from previous behavioral science research which aimed at that general objective.

While the research does not have as its primary purpose the development of a new technique for associating, via a mass media message, two objects of the type described, considerable attention will be given this general problem. The messages used were developed with techniques which are commonly used in the mass media, i.e., script and scenario preparation, expert direction of actors and recording equipment, precise editing, etc. The principal differences in procedures explored in the project are (1) that the referent object in the message will have been determined by objective means rather than the more traditional method of employing an "expert" who supposedly "knows" what should be communicated, and (2) the sequential arrangement of the message content.

The determination of attitude change resulting from specific mass media messages will employ techniques which are commonly known and accepted as useful and effective by the majority of behavioral scientists who are recognized by major national associations. A research design, however, which is a further extension of that proposed by Solomon (40), will be used in an effort to expand knowledge relative to methods for assessing attitude change.

Possible Implications

If techniques, which have been used with apparent success in commerce, can be adapted to increase the effectiveness and efficiency with which educational objectives relating to attitudes are obtained, several changes in existing instructional procedures may be implied.

First, audiovisual materials may be used more extensively to attain attitudinal objectives, provided these materials are demonstrated to be more effective for this purpose. In a simple analogy with commercial applications - as the door-to-door salesman is no longer assigned the principal or sole responsibility for developing a favorable attitude toward a commercial product--the unassisted teacher may not be assigned the sole or principal responsibility for developing appropriate attitudes toward objects of social significance. Both instruments to assess existing attitudes toward referent objects, and materials to change attitudes toward criterion objects may be provided. This may result in providing appropriate learning experiences for learners with specific requirements.

Second, instructional materials intended to modify attitudes may be arbitrarily prepared less frequently on the basis of subjective "experience." The need for behavioral scientists to make an objective evaluation of existing attitudes toward referent objects relevant to criterion objects may be partially established. Thus, producers of audiovisual and other instructional materials may increasingly rely upon objective evidence, in addition to expert opinion, as the basis for the content of certain kinds of instructional materials.

Third, the ineffectiveness of a single learning experience to modify attitudes for all individuals may be further demonstrated with the result that the theoretical need for a wider range of learning experiences may be partially documented. Present practice is for a single film, for example, to be used for all learners with little apparent concern for existing attitudes, socio-economic level, age, sex, or other theoretically relevant factors.

Fourth, new evidence will be obtained both as to the effectiveness of selected, available instruments and the techniques used to develop those instruments when used for purposes of assessing relevant existing attitudes in the preparation of instructional materials. If existing techniques and instruments are found to be ineffective or irrelevant for these purposes, then new instruments or techniques may be suggested.

Fifth, evidence on the degree, or extent, of attitude change which may be expected from a single learning experience (provided by an audiovisual medium) may give further indication of the potential role which these media may have in instructional systems now under development.

Finally, the research design may have implications for methods to better assess the effects of materials designed to change attitudes.

Theoretical Foundations

Current theories of learning provide differing conceptual bases for attitude change. Whether the operations which result from such theorizing are fundamentally different is another matter. The following paragraphs are written to try to communicate from differing viewpoints why the operations which were, in fact, performed, were considered essential if attitudes were to be changed via mass media communication.

Field theories of learning and communication theories would posit that an individual's existing attitudes, values and interests bear a relationship to the direction and degree of change which reasonably may be expected as the result of symbolic experiences. Osgood and Tannenbaum have formalized this idea in what they call the principle of congruity. The principle is that, "changes in evaluation (attitude, as a dimension of meaning) are always in the direction of increased congruity with the existing frame of reference." Studies on the existing frame of reference in relation to the communicative process have been reported by Carlson (6), Janice and Feshbach (26), Dukes (12), Hovland (23) and Likert (29). Fearing (18) has summarized the findings as follows:

> The data obtained from these researches indicate that the need, values, and motives of the individual, whether conscious or unconscious, determine in large measure not only how he sees his world but also how he thinks about it. This means that the individual's perceptual response to a stimulus is dynamic, not passive. It is a process through which the individual comes to terms with his environment at a dynamic, creative level. He is actually seeking meaningful organizations - meaningful, that is, in terms of its congruence with his existing interests, needs and motives.

The problem for the field theorist, then, becomes one of identifying existing "interests, needs and motives," and in some manner, establishing a harmony, or congruence, in the learner's mind (through the symbols in a communication) between the object toward which attitude change is desired and the existing frame of reference.

Reinforcement theory would conceptualize the problem in a different way. Operant behavior (in the desired form) would be elicited by symbolic stimuli and then would be reinforced appropriately with other symbolic stimuli. This notion is every bit as useful, even for communication purposes, as the field and communication theories which view the learner as being somewhat less predictable and considerably more complicated.

If the operant conditioning model is followed, the problem becomes one of identifying stimuli which, when presented to learners, produce desired affective behavior. Further, when that desired behavior is exhibited, additional stimuli, which will be reinforcing, must be produced. Under such conditions the desired response will tend to be repeated when comparable eliciting stimuli are present. There is no *a priori* reason why these conditions cannot be met in a mass media communication provided the fixed pace of the stimuli in the communication happens to be temporally congruent with the behavior of the learner. In terms of operations to be performed, there is the requirement that learner behavior be analyzed as it actually exists when various stimuli are presented and to identify those stimuli which will act as reinforcers.

Association theorists would attempt to build a bond or connection between the referent symbols (which were previously regarded in either a positive or negative manner by the learner) and with the criterion symbols (which represent the attitudinal objects toward which positive or negative feelings are desired). Again, in terms of operations, an analysis of feelings towards valued objects would be required, as well as a communication to establish an association between the symbols which would give the criterion objects the desired affective position.

The purpose of this brief review is merely to establish the theoretical bases for the analysis of existing learner behavior as the initial step in determining subsequent operations in the preparation of an affective learning experience - whether the reason given for that first step be to determine, "the existing frame of reference," "interests, needs and motives," "symbols which will serve as effective eliciters and reinforcers," or "symbols toward which positive attitudes already exist."

Since practically all learning theories could provide logical reasons for analyzing existing learner behavior and/or characteristics, the analyst must decide what form of analysis would be most useful. The nature of the analysis undoubtedly depends upon several factors including the nature of the object toward which attitude change is desired, but it also depends upon the model to be employed in constructing the persuasive communication. The model dictates the order of presentation of symbolic stimuli in the communication and has been the subject of some research (25). The model employed in this project is a synthesis of much previous conceptualization (to be described later) and is herein called the "relevancy model."

The relevancy model, while representing a continuous communication, can be expressed conveniently in three phases. Each phase has a specific intent. Figure 1 illustrates Phase I. Object A represents a dominant goal* of the learner.

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* Goals are defined as either physical or psychological objects which are perceived as incentives to move an individual to either avoid or seek the object; i.e., goals are incentive objects, either high or low in value, and desired either for attainment or avoidance.

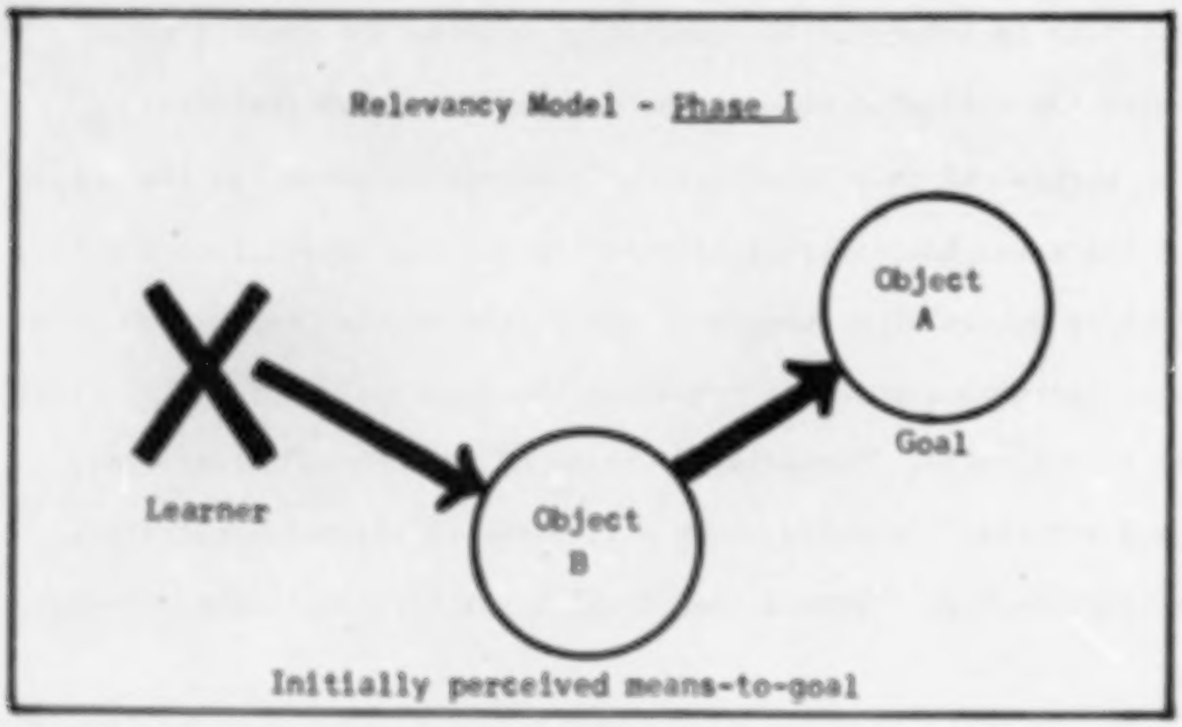

Figure 1.

Object B represents a means-to-goal and is defined as the perceived method (physical or psychological) the learner will employ to attain or avoid a goal object. Interest and attitudes toward the means-to-goal are positive because they are perceived as being relevant to the goal. Phase I represents the content of a communication which expresses a position that is in accord (congruent) with that held by the learner. Theoretically, this serves several purposes, e.g., it makes the learner feel more favorable toward the source of the message, it increases interest in the message because of its psychological "nearness" to the learner, it reduces possible resistance to change (catharsis effect) because the learner knows that his existing position is known by the communicator, and, finally, there is evidence to indicate that when a change in attitude does occur, it is longer lasting and more resistant to a second change when alternate positions have been considered and rejected (7, 32). The effectiveness of expressing the learner's initial bias in a communication has been documented by Ewing (17).

Phase 2 of the relevancy model is represented in Figure 2. The intent of this part of the communication is to dislodge the learner's initial attitude toward object B by establishing a new association between Object B and Object C (which represents an irrelevant or undesired goal). Theoretically, this serves the function of preparing the learner to accept some new object as the means to attain the valued goal. The object which will serve as the most relevant means to attain the goal should acquire a high positive attitudinal position. The initial favorable attitude toward Object B becomes less favorable because it loses relevance for goal attainment purposes.

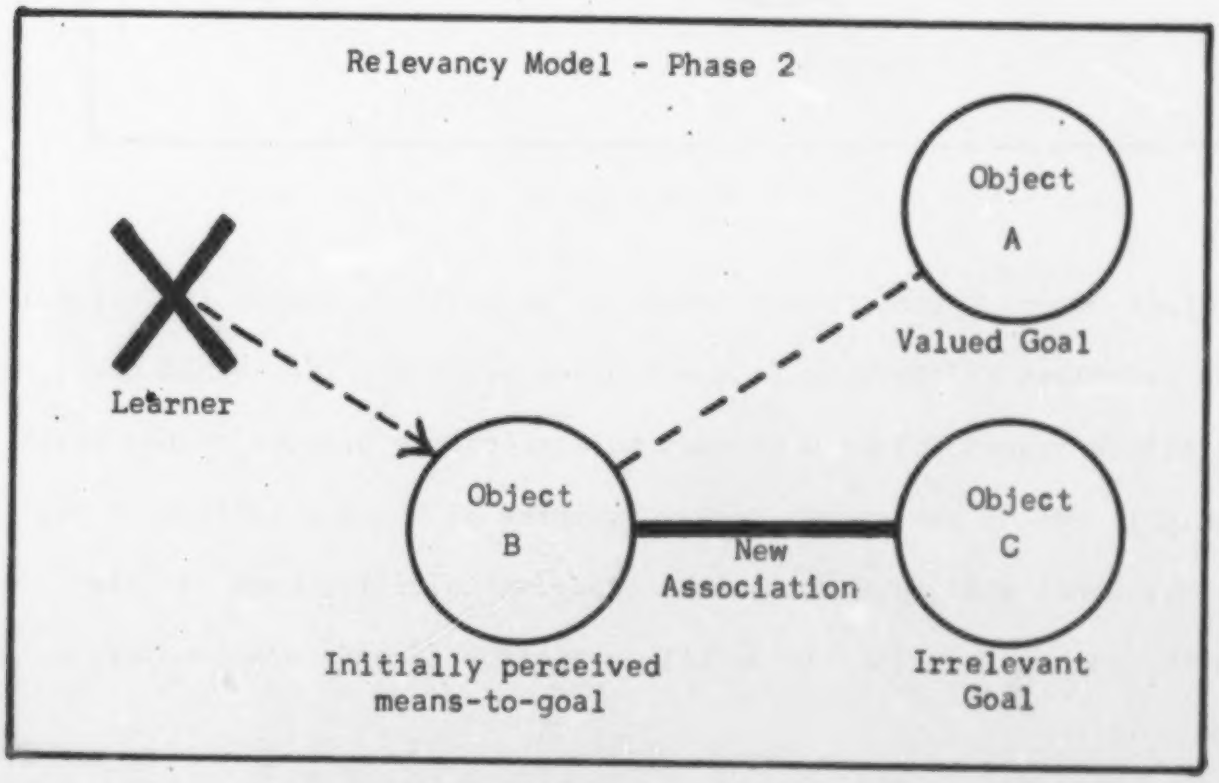
Relevancy Model - Phase 2
Object A
Valued Goal
Learner
Object B
New Association
Object C
Initially perceived means-to-goal
Irrelevant Goal

Figure 2.

Phase 3 is represented in Figure 3. The intent of the communication now becomes that of establishing a new object (Object D) as the relevant means to attain goal Object A.

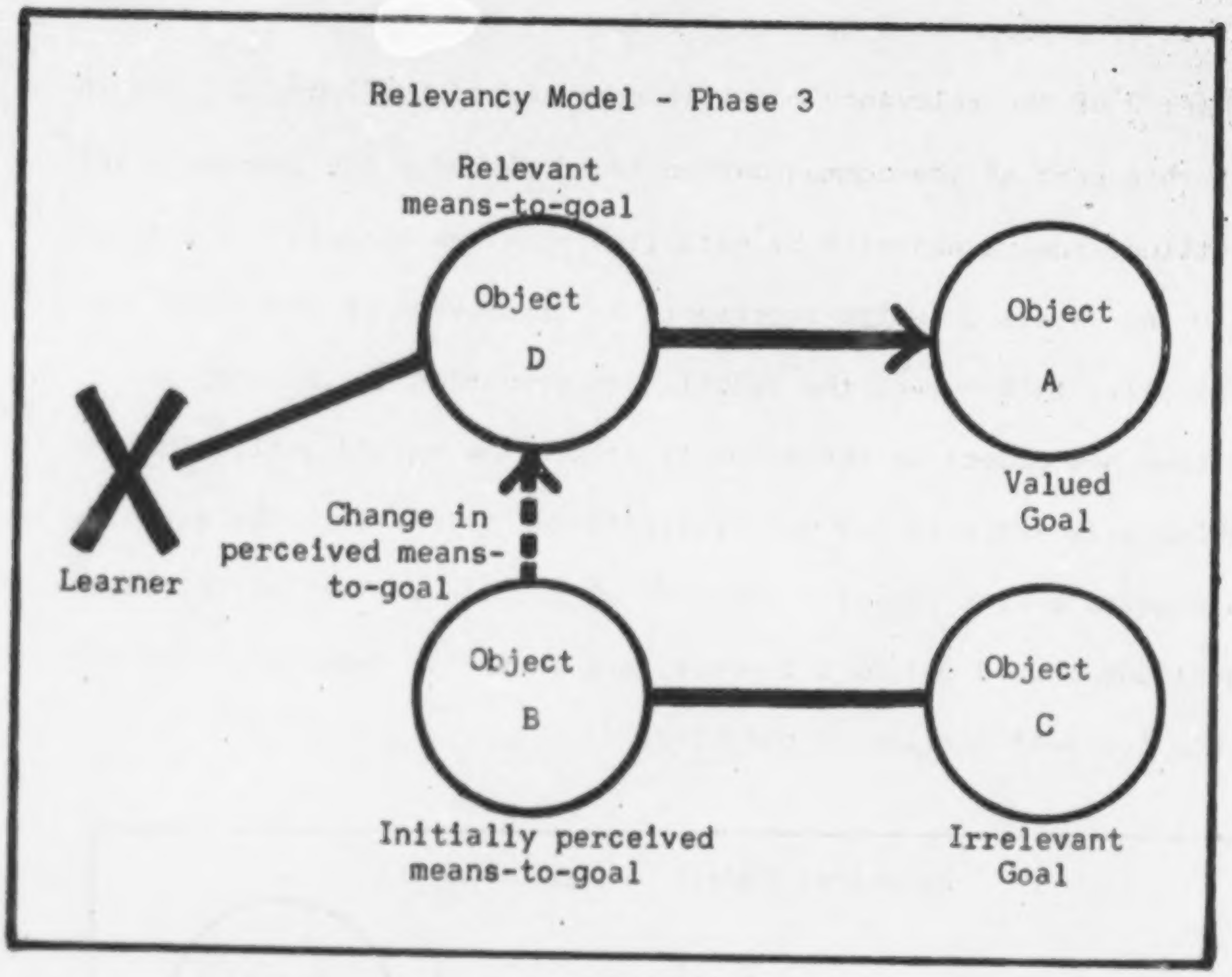
Relevancy Model - Phase 3
Relevant means-to-goal
Object D
Object A
Valued Goal
Learner
Change in perceived means-to-goal
Object B
Object C
Initially perceived means-to-goal
Irrelevant Goal

Figure 3.

Since Object D (the object toward which attitude change is desired) is now perceived as the most relevant means to attain the valued goal, the attitude toward Object D becomes more favorable because of the relationship it has to the valued goal. Examples of the application of the relevancy model will be found in the experimental films used in this research and are described in detail in Section IV and in Appendices C and D.

It is in the process of documenting for the learner the relevancy of Object D and the relationship between Object B and C where the issue of the "facts" becomes important and which is of considerable concern to those who fear a science of persuasion. While it is unquestionably possible that the initial bias of the learner did not represent a prejudiced position and the position advocated by the communication was a prejudiced one, the probability of a change in attitude would be low because the learners existing behavior would be consistently and positively reinforced by environmental events. If the initial attitude were prejudiced and the new attitude represented a full consideration of facts and was, therefore, a more relevant means to the desired goal, it likely would be more consistently and positively reinforced by environmental events. It is also unquestionably true that an environment can be created to reinforce practically any kind of attitude and for this reason "facts" are dependent upon environmental conditions. If the attitude produced by a persuasive communication were prejudiced and not supported by environmental events, it would probably extinguish rapidly and the communication would be ineffective.

Up to this point theoretical bases have been oriented toward a single learner. What additional considerations are involved in a mass communication? Schramm (37) writes, "It is apparent that the audience at the end of the mass communication chain is neither an undifferentiated mass nor an aggregate of completely differentiated individuals. It is rather a complex of over-lapping groups." While Schramm's concept of "group" may be considerably different from that employed in the study, the basic idea seems reasonable that several individuals in a mass audience will probably possess similar characteristics. Those individuals with like characteristics should theoretically respond in a comparable manner to the same communication. Allport (2) states that "whatever stability society may have is clearly due to the similarity of men's attitudes." If it is true that a given society consistently reinforces certain kinds of behavior, it is very probable that many individuals possess certain characteristics which are similar, including common goals and common perceived means to attain those goals. For this reason, one of the fundamental considerations in preparing the experimental messages was a procedure to effectively group individuals to analyze communication effects.

A final theoretical issue relates to the learner's initial attitude toward the criterion object (the object toward which a change in attitude is desired). Much research (9, 11, 15, 27, 35, 38, 48) has been conducted on this general question and the consistent finding has been that "facts" about the object which support the existing attitude are perceived and learned more readily, and retained longer than "facts" which are contradictory to initial attitudes. This would appear to make the changing of attitudes a most difficult endeavor, and it unquestionably is, especially if the attitude has been well learned and is perceived as being vital to the learner's interests. But, a most important consideration, and one often overlooked, is that (in any analysis of effects of a mass communication which is intended to modify attitudes in a given direction) those attitudes which already exist in the desired direction be excluded or analyzed separately from those which lie in the opposite direction. For example, in the evaluative studies done on the "Why We Fight" films (22) used during World War II, "no effects were obtained on the stated orientation objective of increasing resentment toward the enemy nor on the motivation of the men from the standpoint of willingness to serve and to continue the war to unconditional surrender." It is unrealistic, to say the least, that changes in general attitude should result after the showing of documentary films which were negative toward the enemy. The audience studied was American soldiers who had had their lives disrupted, were separated from family and friends, and were in danger of losing their lives all as a result of the ambitions of an aggressive enemy - and these facts were experienced every day both directly and through all individual and mass communication media. The point is, simply, that when attitudes already exist in a given direction, the effects of a communication intended to further modify attitudes in the same direction will likely require an analysis different from that used for attitudes which lie in the opposite direction from the intended effects of the communication. It must be noted that in the "Why We Fight" analyses, as in other previous attempts to assess attitude change as the result of a communication, "some sizable changes were obtained on opinions closely related to the material covered," but that "no appreciable changes were found in the more general attitude areas comprising the orientation objectives or in the area of willingness to serve."

In the research reported herein, the analyses of communication effects were concentrated on those individuals whose attitudes did not already lie in the same direction as those which were intended to be changed by the communication.

General Design of the Study

As an experimental vehicle to serve as the means to determine effectiveness of mass media messages (employing the principles of motivational research) a decision was made to attempt to modify the attitudes of high school students toward obtaining education beyond the high school. While evidence varies, depending upon criteria employed in specific studies, there is general agreement that less than half of the "bright" high school students ever enter college. One recent study (42) reported "that each year roughly 50,000 students with sufficient ability to graduate from college do not even finish their high school education." The President's Committee on Education Beyond the High School (44) has documented the occupational outlook which emphasizes the need for individuals with post high school education to satisfy the rapidly increasing demand in professional and technical occupations. With the declining demand for farm and unskilled workers and the need for sound education to provide a basis for almost constant adjustment to change, there is ample evidence both that the "facts" support the need for a favorable attitude toward post high school education, at least for "bright" students, and that many of these students hold negative attitudes toward continuing their education.

The proposal specified that existing psychological instruments would be used to measure valued goals and interests (preferred activities) of students in the public secondary schools of Oregon. The term "motivational pattern" was given to the combined goal and interest pattern preferred by an individual according to the selected instruments. Through the technique of inverted factor analysis, students who shared similar motivational patterns would be identified (41).

Figure 4 summarizes the three general factors considered in identifying students with characteristics which theoretically would homogeneously group the students for purposes of the experimental communication. The circle represents a random sample of secondary school students. The horizontal line through the circle represents the division between students with high and low scholastic aptitude. The vertical line represents the division between those students who plan and do not plan education beyond high school. The resulting division of students produced four principal groups.

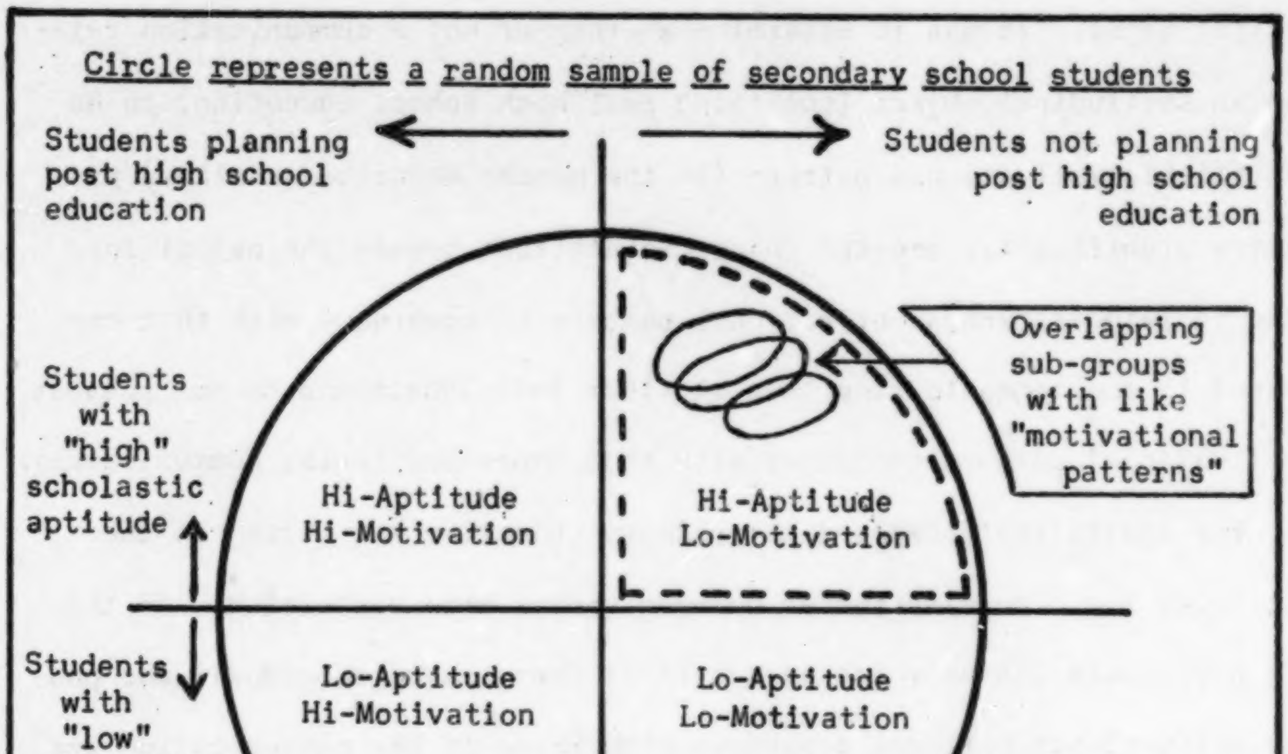
Circle represents a random sample of secondary school students
Students planning post high school education
Students not planning post high school education
Overlapping sub-groups with like "motivational patterns"
Students with "high" scholastic aptitude
Students with "low" scholastic aptitude
Hi-Aptitude Hi-Motivation
Hi-Aptitude Lo-Motivation
Lo-Aptitude Hi-Motivation
Lo-Aptitude Lo-Motivation

Figure 4.

The principal group of concern for experimental purposes was composed of students of "high" aptitude who were either not planning to complete high school or were not planning additional education after completing high school. This group is illustrated by the broken line in the upper right quadrant. The overlapping circles represent sub-groups of individuals who make similar responses on existing psychological instruments. When a message has been prepared which is logically "congruent" with the motivational pattern of one of the sub-groups, that sub-group is categorized as a "congruent group."

The primary objective of the experiment can now be stated in more specific terms. It was to determine whether or not a communication relating an attitudinal object (obtaining post high school education) to an identifiable motivational pattern (in the manner described earlier) produces a significantly greater change in attitude toward the object for those individuals whose motivational pattern is congruous with that expressed in the communication than on other individuals who do not possess a motivational pattern congruous with that expressed in the communication.

For statistical purposes the primary objective was stated in the null form, i.e., no differences between groups were postulated. If the null hypothesis can be rejected and it is found that individuals who possess motivational patterns congruous with those in the communication are those who accept the message to a significantly greater degree than others who experience the communication, it will be assumed that the form of the message produced the differential effects if it is shown that the design of the experiment rules out the alternate hypotheses that differential effects were produced by (1) the nature of the motivational pattern, or (2) the effect of some stimuli other than the message.

In order to rule out the possible hypothesis that differential effects between the two main groups, if present, were produced because of the nature of the motivational pattern, the basic experiment involved two experimental communications, each employing a different motivational pattern. The effects of each message on those individuals identified as congruent with the alternate message were also determined.

In order to rule out the possible hypothesis that the effect of some stimuli other than the message produced the differential effects, control groups were employed which did not experience the experimental communication.

The experimental design employed was an extension of that proposed by Solomon (40). The extension was necessary in order to permit the testing of hypotheses relative to differing motivational patterns. Those individuals whose motivational patterns were intended to be harmonious with the communication are referred to as GROUPS WITH CONGRUENT MOTIVATIONAL PATTERN. All other individuals are grouped and referred to as GROUPS WITH INCONGRUENT MOTIVATIONAL PATTERNS. Each of the two basic groups, in turn, is divided into four sub-groups by means of a stratified random selection procedure, thus creating four comparable congruent groups and four comparable incongruent groups. The addition of "after-only" sub-groups in the design not only permitted the testing of hypotheses relative to motivational patterns and the influence of uncontrolled stimuli, but in addition allowed for the testing of hypotheses relating to interaction effects between the pretest and the communication (Table 1). Since no single hypothesis can be tested relative to all effects of an experimental communication, such as the one employed, several specific hypotheses were tested relative to (a) the effectiveness of the communication on groups of similar and dissimilar motivational patterns, and (b) the interaction effects between the pretest and the communication.

Specific Hypotheses Tested

To determine whether the experimental communication produced an effect on any one group, a test of significance was conducted between the mean post-test score of the group which received the communication and the mean of the corresponding control group which did not receive the communication. It was reasoned that if the evidence were to indicate that the difference in the mean post-test scores was significantly less for the corresponding control group, it could be inferred that the difference was a function of the message. This approach entailed four specific comparisons as follows (from Table 1):

a. Groups A and B

b. Groups C and D

c. Groups E and F

d. Groups G and H

To test the possible effects of uncontrolled stimuli operating in the uniform manner on all groups of like motivation patterns, the technique suggested by Solomon (40) was employed. His technique permitted the inference of means and experiences of pretest scores for the after-only sub-groups thus allowing for an analysis of data in terms of differences between pre and post-test scores. It was reasoned that a significant change in mean score from the pretest to the post-test for any group not receiving the communication would indicate that the change in score was the function of uncontrolled stimuli. This approach also permitted comparison of differences and gains between the "message" group and the corresponding control group.

To determine whether the communication produced a differential effect on groups of unlike motivational patterns, a test of significance was conducted between the mean post-test score of individuals in Group A who could be matched with individuals in Group E on the basis of pretest scores. It was reasoned that if the evidence were to indicate that the mean post-test scores of the selective individuals in Group A were significantly greater than the corresponding mean post-test scores of the selected individuals in Group E, it could be inferred that the effectiveness of the message was a function of the motivational pattern of the group.

Table 1

Research Design Employed to Analyze Effects of a Communication

in Terms of Motivational Pattern

Groups With Congruent Motivational Patterns				Groups With Incongruent Motivational Patterns			
Before-After Sub-Groups		After-Only Sub-Groups		Before-After Sub-Groups		After-Only Sub-Groups	
Message Group (Group A)	No Message Group (Group B)	Message Group (Group C)	No Message Group (Group D)	Message Group (Group E)	No Message Group (Group F)	Message Group (Group G)	No Message Group (Group H)
Pretest	Pretest	Rest	Rest	Pretest	Pretest	Rest	Rest
Communication	Rest	Communication	Rest	Communication	Rest	Communication	Rest
Post-test	Post-test	Post-test	Post-test	Post-test	Post-test	Post-test	Post-test

To determine whether the pretest interacted with the communication, and thereby influenced the post-test score, a test was conducted to determine the significance of the difference between the mean post-test score of Group A and that of Group C. This comparison permitted an inference about interaction effects when the communication was congruent with the motivational pattern of the audience. To determine whether interaction effects were also operative when the message was incongruent with the motivational patterns of the audience, similar tests of significance were conducted comparing the post-test scores of Groups E and G. It was reasoned that if the evidence were to indicate that the mean test score of the "after-only" group was significantly greater than the mean post-test score of the "before-after" group, it could be inferred that the pretest in interacting with the communication masked its effectiveness.

The findings of these analyses are reported in Section V.

Section II

Development of Experimental Materials

The first year of the study was devoted to the analysis of motivational patterns of high school students, the development of experimental films based on the analysis of student responses to existing psychological instruments, and the development of criterion instruments to assess the effects of the communication which selected groups would experience.

The first dimension of the motivational pattern (goals) of high school students was assessed by an instrument developed by Stouffer entitled, Your Educational Plans (43). The instrument assesses thirty-one factors which were revealed by sociological and psychological studies to be "most frequently related to the gaps between potential and performance, between ability and aspiration." It must be noted that student answers to questions only represented "the pupil's reported perceptions, not necessarily objective facts." However, it should also be observed that "the fact that the student has one kind of perception rather than another is of utmost importance, even if his perception may in some instances be incorrect." The instrument, which was almost ten years in the making, represented what was considered to be an effective means for measuring student goals and other important factors related to those goals.

The second dimension of the motivational pattern (means-to-goals) was assessed by an instrument developed by Guilford, Christensen and Bond, entitled The DF Opinion Survey (21). The inventory was one result of "a very comprehensive factor-analytic investigation of interests" (20). The term "interests" as used herein is considered to be an individual's generalized behavioral tendencies toward a certain class of activities. These tendencies may be either positive or negative. In the test manual "interests were defined basically as dimensions of motivation." The essential question for purposes of preparing the experimental communication was - what activities or means (to attain desired goals) will the respondent most likely prefer? Ten traits are measured - each by means of 30 items. While the DF Opinion Survey has been designated as an "experimental" test, estimates of the reliability have been made from a random sample of 100 males and 100 female college students and were found to be high. Intercorrelations of the ten factor scores were found to be low - "70 per cent of the r's are below .30, which indicates a fair proportion of relatively independent scores." The DF Opinion Survey was used in previous studies (Portland, Oregon) and was found to differentiate among students who had been classified as under and over-achievers.

In this study, instruments were administered under carefully controlled conditions. (See Appendix A for exact instructions given.) A total of 1,052 high school seniors completed both tests. Students were from five high schools classified as (1) large urban, (2) suburban, (3) large rural, and (4) small rural. For purposes of the analysis, students who obtained an estimated I.Q. rating of 100 or below on group administered tests of intelligence were classified as "students with low scholastic aptitude." Students who scored 101 or above, on the same instruments, were classified in the "high" groups. While this division is an arbitrary one, subject to much criticism, there is good evidence that a very low proportion of students in the "low" group will succeed in two-year or longer post high school professional or technical programs. Obviously, many in the high group will not succeed in these programs either, but at least not many potential advanced education candidates will be excluded with this criterion.

A similar arbitrary classification was used to determine whether a student was planning post high school education. One item (No. 7) in Your Educational Plans (YEP) instrument asked the question "How likely are you, really to go to college?" Table 2 indicates the responses to this question made by 494 students. The evidence suggests that for the first two responses, "Definitely will go" and "Almost sure to go," a relatively high proportion do, in fact, attend college. For all other responses the proportion actually attending college was low - less than half of those who indicated attendance as "likely" actually attended. With this evidence, the decision was made to classify those who made one of the first two responses as "planning college," and all others as "not planning college." This decision was also an arbitrary one and, therefore, subject to criticism; however, errors on either side will likely either "balance out" or vary to such an extent among repeated samples that no more reliable classification could be made within available time and resource limitations. A summary of the proportion of students in each classification is seen in Figure 5. The categories represented in Figure 5 are the same as those projected in Figure 4.

Studies of actual attendance in post high school institutions in Oregon support the findings of this investigation. Approximately forty percent of Oregon High School graduates matriculate in college-type institutions. Table 3 provides a detailed analysis of the numbers and percentages of students in each classification, by sex. It is important to note that there are nearly twice as many females in the group of primary concern to the experiment. In order to identify test items which might be useful in differentiating the target group from others

Table 2

Actual College Attendance as Forecast by Students' Reported Intentions

Question 7

"How likely are you, really, to go to college?"

	Definitely or almost sure to go	Very likely or rather likely to go	Unlikely to go or definitely will not go	
Follow-up				
Actually attended college	125	45	14	184
Did not attend college	43	59	208	310
	168	104	222	494
Percentage attending college	74%	44%	6%	

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* Data for high school juniors and seniors, as obtained in 1957 and followed up in Autumn, 1958. (From: Counselor's Manual: Your Educational Plans)

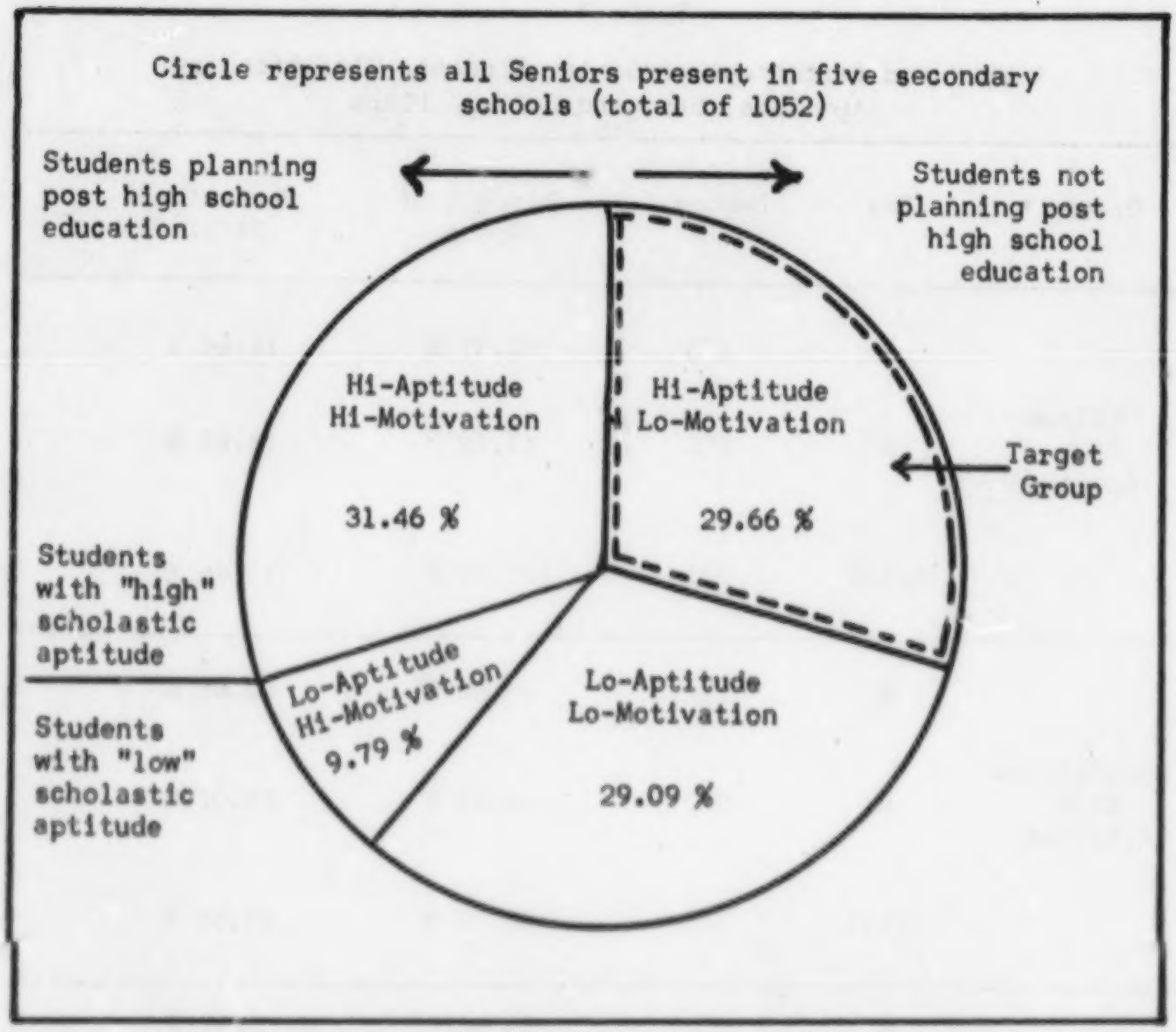


Figure 5.

(Figure 5), an analysis of variance - multiple classification of responses to each item was conducted. Groups were classified by sex and school (urban, suburban, large rural, small rural). Main effects, first and second-order interactions, where significant are reported graphically in Appendix B. Corrections were made for disproportionality and only differences which were significant at the 1% level of confidence are reported. Significant differences were found between or among some main effects and first order interactions on 22 of the 38 characteristics

Table 3

Number and Percentage of Senior Students Classified by Aptitude, Sex, and College Plans

Group	Sex	Number	Percent of Group	Percent of Total
College High Aptitude	M	175	52.87 %	16.64 %
	F	156	47.13 %	14.83 %
	Total	331	100.00 %	31.46 %
Non-College High Aptitude	M	112	35.90 %	10.65 %
	F	200	64.10 %	19.01 %
	Total	312	100.00 %	29.66 %
College Low Aptitude	M	57	55.34 %	5.42 %
	F	46	44.66 %	4.37 %
	Total	103	100.00 %	9.79 %
Non-College Low Aptitude	M	161	52.61 %	15.30 %
	F	145	47.39 %	13.78 %
	Total	306	100.00 %	29.09 %

N = 1,052

measured. While there were 31 items in the YEP and 10 in the DF Opinion Survey, four items in the YEP were not considered useful in the analysis (items 8, 17, 25, 26). A mean score of remaining YEP items was meaningful in that all items were weighted in the same direction; therefore, this mean score was used as an additional discriminator. Responses classified as supporting college attendance were rated one and those less supporting on a graduated scale up to seven. Thus, with four items eliminated from the YEP, and one added (the mean of all items utilized), twenty-eight items remained and with the ten factors from the DF Opinion Survey there resulted a total of 38 characteristics which were analyzed in the study. There were no significant differences in 16 of the characteristics measured. The information gained from this analysis was invaluable in making decisions as to the content of the experimental communications.

The pattern of characteristics which individuals should possess to comprise a homogeneous sub-group was determined through the technique of inverted factor analysis or Q-technique. Because of the rather consistent sex differences in response to test items, the decision was made to conduct a separate analysis for each sex. Therefore, twelve girls were randomly selected from the 200 high aptitude - not planning college group and twelve boys were randomly selected from the 112 in the same group. Normative test scores were converted to ipsative scores through the four-phase process described by Snedecor. Raw scores were first converted to standard scores for each characteristic measured and then the resulting standard scores were converted to T-scores for each characteristic. A second set of standard scores was derived for each individual from the T-scores obtained from the first conversion. A second set of T-scores was obtained from the second set of standard scores and these represented ipsative measurements for each individual.

A product-moment intercorrelation matrix for the 38 scores for each of the 12 students was prepared for each sex. A principal components analysis was performed using an IBM 709 computer for all statistical computations. The resulting intercorrelations and residuals for girls are reported in Table 4. The rotated factor matrix for girls is seen in Table 5. Although six factors were extracted in the analysis for girls, only two appeared to merit interpretation. Inspection of the matrix reveals that on Factor 1 the heaviest loadings are on Girls H and K - Girl H with a positive loading and Girl K negative. A direct comparison was then made between the responses of Girl H and Girl K on the 38 characteristics on which they were measured. Large differences were noted on several measures but especially on the "adventure versus security" scale. Factor 1 was subsequently labeled a security factor. Factor 2 from the matrix revealed that the heaviest positive loading was on Girls E and B and the highest negative loading on Girls L and J. A direct comparison of the responses of these four girls revealed large differences on several measures but especially on the characteristic of "need for attention." Thus an attention factor was identified. Study of all characteristics where specific comparisons were directed by the rotated factor matrix was continued until various "types" of students were identified. One type (a student described in terms of test characteristics) served as the model for preparing the first communication. This type is described below under the heading of Film 1

An analysis employing identical procedures was made for the boys. Intercorrelations and residuals are reported in Table 6. The rotated

Table 4

Intercorrelations and Residuals

Thirty-eight Measures - Twelve Girls*

Girl	A	B	C	D	E	F	G	H	I	J	K	L
A		07	05	-42	17	-25	09	-19	12	-14	05	-28
B	-10		-13	-26	-03	17	-22	-04	-09	-22	01	-33
C	-04	-15		03	-42	-09	08	-28	-31	09	-07	08
D	08	00	-02		23	19	-26	-19	-21	04	-02	-11
E	-12	02	-02	-07		-20	-38	01	26	-40	-08	-23
F	16	-21	09	00	01		00	-24	01	-12	04	-12
G	00	-03	05	03	05	07		-10	-25	06	20	-21
H	00	00	-01	-04	-04	-02	-11		23	-08	-47	-01
I	01	-14	17	07	-08	07	11	-08		-17	-35	08
J	08	14	-19	05	05	-05	-07	-04	-04		-08	30
K	-10	07	01	-05	-03	-17	-18	24	-02	-02		-14
L	-05	04	-01	-04	03	-06	01	03	-16	-21	03	

* Decimal points are understood to precede each table entry. Correlations are above the diagonal; residuals, below.

Table 5

Rotated Factor Matrix

Twelve Girls - High Ability, No College Intent

Girl	I	II	III	IV	V	VI
A	-.24	.31	.69	.37	.08	-.08
B	.07	.44	.36	-.63	.22	-.14
C	-.04	-.16	.05	.09	.05	-.87
D	-.13	.10	-.90	.07	.23	-.11
E	-.07	.50	-.17	.42	.48	.43
F	-.20	.02	-.24	-.78	-.01	.13
G	-.11	.02	.13	.08	-.89	-.06
H	.88	.06	.00	.09	-.14	.25
I	.25	-.10	.29	.05	.37	.60
J	.02	-.65	-.08	.07	-.15	-.21
K	-.78	.10	-.01	-.05	-.33	.08
L	.01	-.86	.02	06	.23	.08

factor matrix for boys is seen in Table 7. Inspection of the matrix directs attention to Boys K and L who have high negative loadings on Factor 1, and boy E who has a high positive loading on this factor. A direct comparison of the responses which were similar and negative for Boys K and L and were considerably different and positive for Boy E again revealed several scores which differentiated the boys, but especially the characteristic "need for precision." The two boys with negative loading scored very low on the test, indicating a dislike for exactness, precision, and detail. Again, the rotated factors matrix directed a series of comparisons between individuals until various types of students were identified. One type was selected to serve as the model for preparing the second communication. This type is described below, under the heading of Film 2.

Film 1

With the information gained from a study of the two instruments administered at the beginning of the first year of the study, the specifications for a motion picture were prepared. It should be noted that while the specifications for the film were prepared by the principal investigator, the actual working script was prepared by a script writer. An attempt, by the principal investigator, to write the entire script was not considered acceptable by the film producer. This experience led to the development of a relationship which should help guide further efforts in which behavioral scientists attempt to contribute to the production of more effective instructional materials. The generalization may be succinctly stated: While the professional writer needs the information obtained by scientific techniques, the scientist also requires the artistic talent and skills of the professional writer to convert his

Table 6

Intercorrelations and Residuals

Thirty-eight Measures - Twelve Boys

Boy	A	B	C	D	E	F	G	H	I	J	K	L
A		-36	10	-05	10	02	-10	-42	-18	-27	01	-09
B	01		-17	-13	-23	06	-23	-13	04	03	07	-01
C	-01	08		41	03	-32	-21	-09	-21	-05	-02	-10
D	-04	11	-14		08	-37	-24	-22	-05	-21	32	24
E	-15	03	-18	18		05	10	16	-23	04	-34	-51
F	-13	01	23	19	10		21	00	17	-03	-18	00
G	05	10	03	03	-09	-05		53	00	-10	-35	-24
H	07	-02	02	-05	-08	02	-11		-20	08	-26	-21
I	01	04	-03	-01	09	-05	-01	05		07	-16	03
J	07	-27	-07	-03	-10	03	02	01	-10		-17	-33
K	00	-14	-09	-01	07	03	05	01	07	14		49
L	-02	07	00	-03	06	03	-15	-02	-07	12	-12	

* Decimal points are understood to precede each table entry. Correlations are above the diagonal; residuals, below.

Table 7

Rotated Factor Matrix

Twelve Boys - High Ability, No College Intent

Boy	I	II	III	IV	V
A	.15	.12	-.68	-.54	-.22
B	-.17	.24	.73	-.20	-.11
C	.16	-.72	-.13	-.13	-.07
D	-.26	-.77	-.15	-.09	.05
E	.66	-.08	-.21	.07	-.29
F	.03	.72	-.13	.00	.14
G	.16	.29	-.31	.74	.06
H	.15	.03	.10	.88	-.19
I	-.04	.14	.05	-.08	.94
J	.47	-.03	.57	-.03	.17
K	-.71	-.19	.08	-.24	-.27
L	-.87	-.03	-.08	-.05	.07

knowledge into a useful product. Experience gained in this project indicates that a very effective way for this cooperative effort to take place is to have the scientist prepare specifications for the script which essentially communicate the findings of his research to the script writer together with a description of what the message should communicate to the audience in order that the resulting product potentially be an effective communication.

In the present instance, the target population consisted of high ability girls who were not planning education beyond the high school. The evidence indicated that a sub-group existed in this audience who possessed distinctive characteristics which should be considered in the communication. The sub-group could best be described as one whose members sought security and were more dependent, subservient and in need of support than other girls of comparable ability. This type of girl also had a relatively high need for attention and for certain kinds of recognition and status. The means to attain the desired security and attention were perceived to be marriage or a few selected occupations which were listed with a much greater frequency than other occupations. Preferred occupations were: housewife, secretary, airline hostess, clothes designer, nurse, with a smaller number indicating teacher, commercial artist and beautician. It should be noted that while one of the selected instruments was intended to identify the goals and another the preferred activities or interests of the target audience, in actual practice both of the instruments helped to identify characteristics of the learner which were then interpreted for communication purposes by the principal investigator. It should be pointed out that the instruments were not designed specifically for communication analysis, and that they were not ideally suited for this purpose. Whether the information obtained from them was, in fact, useful could only be determined through empirical means.

In addition to communicating to the script writer the research findings which described the target audience, the specifications applied the relevancy model to this particular situation as follows: The message should clearly establish the fact that the communicator understands that many high school students desire security, a home, adequate income, the kind of attention that one receives from a loving husband, family and friends, and that this is a normal, reasonable and acceptable goal for a young person. The message must, then, also acknowledge that the means which many high school people perceive to attain that goal is to get a job or a husband, or both, as soon as possible in order to begin working toward the desired goal. The message, after acknowledging the existing notion of what is important, must document, both factually and through dramatic means, that early marriage and unskilled labor is not conducive to security and other factors associated with the desired goal. The points might be made, for example, that (1) the divorce rate is higher among early marriages than it is for older age groups, (2) the income from unskilled labor is considerably lower than for those with advanced training, (3) the unemployment rate is higher among those with a limited education, (4) an acceptable standard of living is less likely among those with lower earning power, and (5) the kinds of occupations open to those with limited education are not as acceptable or pleasant as those open to more skilled persons. Further, the audience should realize that present interests are transitory and likely to change with increasing experience. In other words, every attempt should be made to associate early marriage and an immediate job with a life (1) in which neither marriage, income, or future is stable, supportive, or comfortable, (2) which is associated with low status, and (3) which provides little attention or recognition for the girl. The message should then document and dramatically illustrate that college attendance affords an opportunity for marriage with an individual who has greater earning power, less chance for unemployment, greater chance for a lasting marriage, a desirable home and family life, and the kinds of attention, status, and personal rewards which attend economic security or which attend a high socio-economic status. The communication must also attempt to associate college attendance with security, comfort, status, attention, and the attainment of comparable objectives related to permanence and stability in contrast to the precarious, meager life of certain religious and other unmaterialistic groups.

The script which resulted from these specifications is attached as Appendix C. Film 1, entitled "The American Dream" is available for experimental purposes for a nominal handling charge from the Department of Visual Instruction, General Extension Division, Corvallis, Oregon.

Film 2.

The second experimental communication was prepared in a way comparable to Film 1, with the exception that the research data was obtained from male high school students and that a different goal and means-to-goal was communicated in the film. The specifications in this instance were developed from research which revealed that many male high school students who have high ability and who do not plan to go to college or vocational school after high school, have certain characteristics which are different from high school students of both low and high ability who do plan to continue their education. First, the level of aspiration, with reference to the amount of training and the income to be realized from their preferred occupation, is lower than for those students who plan college. In general, these students of high ability not planning college appear to be satisfied with manual labor or any income-producing occupation regardless of status or income associated with the work. In essence, there appears to be little concern for status or income but rather a certain kind of freedom to pursue immediate interests and to enjoy one's self by being free to go where one wants to go, do what one wants to do when one wants to do it, without supervision or responsibility and certainly without routine, detail or close supervision. In general, they (1) take a rather realistic view of themselves and their present status, (2) seek amusement and humor, (3) possess a matter-of-fact attitude toward life, and (4) are forthright and direct. High school academic work was not important. Grades were low, and they did not apply their abilities. Their parents, brothers and sisters did not go to college. Their best friend is not going to college, and they believe that their best friend thinks that they should not go to college. In many instances, financial considerations were considered serious, making it, therefore, more realistic to think of getting a job than doing anything else. In summary, the target audience was a group of high school males having high ability but having been reared in an environment which did not support college or technical school education. Further, the members of the target audience may best be described as thinking to themselves, "the old man didn't have a college education and he got a job, and that is good enough for me." It is perceived by the group that this goal (freedom from supervision, detail, etc.) will be achieved best by getting out of high school as soon as possible and seeking any kind of employment that will provide enough income to buy a car and to pursue one's immediate interests.

The specifications developed indicate that the purpose of the film was to change the attitude of these high school students toward further education and that it should be aimed at boys who live in the type of environment which could best be described as "nonreinforcing" for advance education. The films should initially recognize that the goal of being free to pursue one's immediate interests without supervision or direction from others, regardless of the nature of those interests, was a normal, reasonable and understandable objective for a typical American young person. Second, the message should communicate that many high school students have perceived that the way to obtain the desired kind of independence and freedom was to get out of high school as soon as possible and get a job that would enable them to buy a car, which would in turn make them free to go when and where they pleased and pursue any legal activity which their interests would dictate.

The message should then document and dramatically illustrate that the preferred mode of activity would lead to a goal quite different from that anticipated, namely, the kind of life that would require constant and close supervision during work hours, insufficient income to pursue the kind of interests that were most desired, and would, in general, lead to a life which was restrictive, confining and directed by others. A strong association had to be established between unskilled workers and close supervision and not enough income to provide freedom of choice for desired activities. The message should then turn to the development of an association between college attendance and the originally desired goal. An attempt should be made to document and dramatically illustrate (1) that a college education today is comparable to a high school education in the time of his parents, (2) that in the future almost all desirable occupations which are relatively free from supervision will require an education beyond the high school, and (3) that while further education isn't exactly what the student had in mind, it is well worth the effort because it will practically assure that one can do the kind of work he likes and will be well paid for it. Further, that while inventions are increasing the variety and pleasure of certain kinds of occupations, these new occupations require advanced education and are not available to those who have not demonstrated that they have the necessary or required skills. Further, the point should be made that a college education is possible despite lack of immediate resources and that a boy can do his friends a sincere service by convincing them that they too should go to college or obtain an advanced technical education which would enable them to pursue the kinds of activities which are of greatest interest to them. A strong association must be established between advanced education and freedom from supervision and detailed, precise work and, at the same time, achieve a capability for pursuing one's interests.

The script which resulted from these specifications is enclosed as Appendix D. Film 2 was entitled, "Like - Getting Out," and is available for research purposes for a nominal service charge at the Department of Visual Instruction, General Extension Division, Oregon State System of Higher Education, Corvallis, Oregon.

For purposes of the experiment, it was necessary that the viewing conditions be as similar as possible for all viewing groups. For this reason, it was decided to film a brief introduction and attach it directly to the experimental film. Thus, instead of the usual teacher introduction which would provide a different "set" in which to view the film, this was held constant for all showings. The purpose of the introduction was merely to establish a reason for viewing the film, to establish a common "set," and to establish the importance for paying attention to the film. At each showing of an experimental film in the study, the principal investigator merely stated, "The reasons for seeing this film are explained in the film itself, and no further introduction is necessary." The two introductions were identical except for the final statements which were modified slightly in order to relate them more meaningful to the experimental communication which followed. A study of Appendices C and D will reveal the detailed nature of the introduction and the precise nature of the experimental films.

Section III

Development of Criterion Instruments

Many prior research efforts (4, 5, 28, 36, 46) have been directed toward finding techniques which would validly measure attitudes. From the evidence of Edwards and Kenney (16), Cronbach (10), Newcomb (33) and Campbell (5), the decision was made to employ the Likert technique (28). Theoretical and empirical bases for employing "paper and pencil" instruments to assess attitudes are summarized elsewhere (14) but the importance of creating test situations in which subjects could express sincere motives was held to be crucial. Under the conditions of the experiment, categorical agreement or disagreement with a clearly stated opinion about post high school education is regarded as significant behavior. Thus, changes in attitude scores are considered to be useful evidence in evaluating effects of films under the conditions of the investigation.

A major portion of the first year of the study was devoted to the development of criterion instruments. The initial pool of potential items was developed from essays written by high school students. Cooperating teachers in two high schools asked their students to write factual answers to the following questions: (1) How do you feel about formal education beyond high school?, and (2) What feelings do you think other students have that differ from yours? A total of 161 students wrote replys to these questions. The answers given related post high school education to many objects including marriage, educational costs, potential income, interests, security, personality, interpersonal relations, employment, family, military service, status, boredom and crime. Using the general wording and phraseology of the students, a total of 550 items were constructed. For each object (marriage, costs, etc.) a positive and a negative statement was devised for three intended levels of effect. One level merely suggested positive or negative feelings, e.g., "I don't feel that I have the ability to benefit from college." A second level indicated general approval or disapproval of a course of action (by others) as contrasted with feelings, e.g., "If a person really has the ambition to get ahead, he can do it without a college education." A third level stated direct positive or negative action, e.g., "A college education is the best thing for me."

From the total pool of 550 items, five judges selected the 150 statements which, in their opinion, best fulfilled the criteria of (1) range of attitudes, re: intensity, i.e., very positive to very negative, (2) representativeness of expression, i.e., most appropriate wording, (3) variety of objects, re: diversity, i.e., inclusiveness of different kinds of feelings, and (4) reality, i.e., how likely was the statement to represent attitudes actually held by students.

These 150 items were then administered to 206 students in three different high schools. Ninety-two males and 114 females participated in this administration. Analysis was made of each individual test item. Item difficulty and item discrimination were evaluated on the basis of internal consistency, by sex, using the upper and lower 50 per cent as a criterion when scores on individual tests were placed in an array from the highest score to the lowest. Appendix E contains the 150 item preliminary form of the test, item analysis data, and the two test forms which eventually were developed as the criterion measures for the study.

The selection of items for the final forms was made from the item analysis. For administrative reasons the decision was made to limit the final forms of the test to 50 items each. This allowed all items with a discrimination index less than .42 for the boys and less than .47 for the girls to be discarded. The remaining items were randomly assigned to one of the two test forms. Slight differences between forms existed following the random assignment of items, therefore; six items were exchanged which reduced those differences. The results obtained from this distribution of items are shown in Table 8. It should be noted that mean scores on the two forms for all items differ only in the fourth decimal place for the boys and in the third decimal place for the girls. The mean differences between high and low groups for the two forms for each sex also differ only very slightly. Although every known procedure was carefully followed in developing equivalent test forms, in order to avoid any possible inconsistencies, the statistical procedures employed eliminated variance due to sex, test form, or the interaction of these factors with each other or the principal independent variables to make certain that main effects were not distorted.

Table 8

Mean Scores All Items and Mean Differences Between Scores High and Low Groups, Final Forms, by Sex and Test Form.

Form	Mean Scores All Items Boys	Mean Diff. Scores Boys	Mean Scores All Items Girls	Mean Diff. Scores Girls
A	2.7266	.8438	2.6546	1.1034
B	2.7264	.8464	2.6584	1.0918

Validity of the Tests

In order to obtain a measure of the validity of the two test forms, a study was made of their predictive effectiveness. In May, 1961, a total of 141 seniors from School District 13CJ in Oregon responded to the two forms of the instrument - 70 to Form A and 71 to Form B. A follow-up was made of these same students in the fall of 1961. Information was obtained on those who matriculated and those who did not matriculate in a college or university. Thus, the external criterion used as a measure of correlation was a forced dichotomy. It is interesting to note that not only paper and pencil tests but rigid measures, such as actual college attendance, also have serious limitations as a "true" score of, in this instance, "attitudes toward college." For example, one student whose score on the attitude inventory was very high and who expressed a strong desire to attend college found it necessary to be confined in a Tuberculosis hospital. Another had no college aspirations and a negative attitude toward college but was literally coerced by his family to "give college a try." An automobile accident and other changes in family status changed plans in some instances and in general, confounded attitude and overt behavior in unpredictable ways.

The biserial-r between test scores and college matriculation was .70 for the test group completing Form A. The scores ranged from 66 to 192 and included 35 females and 36 males. An inspection of the test scores and actual college matriculation revealed that among individuals scoring 146 or above, 23 out of 35, or approximately 66 per cent matriculated. Among students scoring 145 or below, only four out of 36, or approximately 11 per cent matriculated. The mean score for all individuals in the test group was 139.04.

For Form B the biserial-r between test scores and college matriculation was .80 for the test group. The scores ranged from 93 to 188 and included 31 females and 39 males. The mean score for those taking Form B was slightly higher at 140.94. An inspection of the test scores revealed 150 as a natural dividing score between those matriculating and not matriculating. Among individuals scoring 150 or above, 21 out of 26, or approximately 81 per cent matriculated, while among students scoring 149 or below, only four out of 44, or approximately nine per cent, matriculated.

Evidence of the coefficient of reliability of the two instruments was gathered during the second year of the experiment on individuals who constituted control groups, completing both forms of the test on a pre-post basis, but not receiving one of the experimental communications. The coefficient of reliability (Spearman-Brown) between the two test forms was .87 with each form administered first in approximately an equal number of the 820 cases constituting control groups which received both pre and post-tests. The time between the two administrations varied between three and four days among the seven schools participating in the study.

Section IV

Experimental Procedure

A total of 3,431 students participated in that phase of the study which was concerned with analyses of effects of the experimental films. This number is in addition to the 1,052 students who participated in the first year study described in Section II. Appendix F provides details relating to the experimental population such as dates of testing and film showings and distribution of treatments among classes and schools.

Study of Appendix F will reveal that assignment of subjects to experimental groups, viewing Film 1, Film 2, or serving as a control subject, and the post-test form completed, was made randomly among existing classroom groups in the several participating schools. Greenhill (19) has pointed out problems of randomizing students under these conditions. It is imperative in an experiment of this type that students be randomly assigned to experimental treatments in order that any biases affecting the experiment will have an equal opportunity of affecting each treatment. It is believed that all conditions for randomization were met under the procedures employed. Every condition had an equal opportunity to be assigned to any class in any school. No comparisons were made between or among schools or classes. Individuals in any grade level, in any classroom group, from any school might comprize the group that received, for example, Form A of the pretest, viewed Film 1 and completed Form B on the post-test. The same statement can be made for every other treatment group whether they received a pretest or not, whether they viewed a film or not, and whether they saw Film 1 or 2, or received test form A or B first or last.

Assignment to congruent or incongruent groups (Table 1) within each form of treatment was made on the basis of responses to the same two instruments employed in the first year study (Section II), Your Educational Plans and The DF Opinion Survey. These were administered to all students present in the seven experimental schools during October and November, 1960. Your Educational Plans was scored by Science Research Associates, Inc. in the manner prescribed in the test manual. The DF Opinion Survey was hand scored and the scores for each trait for each individual student were entered on an extension of the reporting form employed by Science Research Associates, Inc. for the Your Educational Plans instrument.

Although no attempt was made to identify specific individuals in congruent groups during the treatment and data collecting phases of the experiment (this was accomplished later in data processing) the criteria employed to identify these individuals requires explanation. For a girl to be classified in a congruent group, a specific pattern of scores was required as follows: I.Q. 101 or above; Question #7 of YEP (college plans) score of three or below; if pretested, score of 150 or below on pretest; on DF Factor #1 (need for attention) 10 or above; on DF Factor #3 (adventure vs. security) seven or below. The DF cutting scores represent approximately the second decile (point below which 20 per cent of the cases would lie).

For a boy to be classified in a congruent group, a different but equally specific pattern of scores was required as follows: I.Q. 101 or above; Question #7 of YEP (college plans) score of three or below; if pretested, score of 150 or below on pretest; on DF Factor #8 (realistic thinking) 13 or above; on DF Factor #9 (need for precision) three or below. The DF cutting scores again represent approximately the second decile. The factors employed in determining congruency were identified in the same factor analysis which aided in designing the experimental films.

All individuals not identified for assignment to congruent groups classified as incongruent.

Within each school the experimental procedures employed were very similar. Testing and film showing dates had been established the previous fall so there was ample planning time for the teachers involved. Approximately two weeks before actual testing and film showing, a teacher's meeting was held in each school. Detailed instructions were given and discussed with emphasis on the requirements of the experiment. The regular teacher's role was to be that of a non-participant. There were to be no organized discussions of the tests or the films. Project personnel were to enter designated classes at the beginning of a class period and be introduced to the class as members of a research team with whom the class should cooperate. Students were instructed that when they had completed the assigned task they were to use any remaining class time for individual study.

Project personnel all followed a pre-determined routine. The instructions given students were those described in Appendix A under the heading "College Questionnaire Instructions." If questions were raised by students, project personnel were instructed to give the minimum possible answer to enable the student to proceed and always to urge the student, "to reply as he actually felt because no one who knew him would see his answers and he was perfectly free to indicate his true feelings." In the opinion of project personnel, the testing was most satisfactory and there were few questions raised.

Film showings were handled in a different manner. All classes scheduled to participate in the experiment during a given hour were taken to the assembly hall and all viewed the same film. During succeeding hours the same or a different film might be viewed since the film to be shown each hour had been randomly determined. No introduction was given to the film. Before the film showing, "sign up" sheets were passed down each row in order to get an accurate record of the students who saw each film. No students were admitted late to the assembly hall. When the "sign up" sheets had been collected the lights were dimmed and the film was shown. The scripts for the filmed introductions to the actual experimental films are reproduced in Appendices C and D. This was done in a further attempt to make all the conditions the same for all treatment groups except for the independent variable represented in the experimental film.

The post-test was administered two days after the film showing. Two days was selected as the interval between experience and post-test for several reasons. The primary purpose of the investigation was not to determine the long-term effects of the films. Rather, it was to determine if the films had differential effects. There was no experimental requirement, therefore, to wait for several weeks or months before retesting. Such a procedure would only confound results because of uncontrolled experience interacting with whatever effects were produced by the film. At the same time, however, there was no desire to get an exaggerated impression of effects of the films due to some immediate but ephemeral enthusiasm for the concepts presented. There is general consensus in the literature that the initial rate of forgetting is more rapid than the rate at later stages. The classical studies (13, 31) and the generalizations therefrom (50) suggest that measurements taken within a few minutes after the learning experience would be different from those taken a few days later, but those measurements taken from two to three days after learning and those taken several days or weeks later would probably not be very significantly different. This finding in the affective domain has been substantiated by Edling (14) in a study comparable to the present one also employing Likert scales. Two days probably represents an interval sufficiently long to let immediate impressions fade and at the same time avoid unnecessary confounding due to supplementary uncontrolled experiences.

The criterion instruments were machine scored. The resulting data were combined with the YEP and DF Opinion Survey scores together with information as to which film or control group the individual was assigned. From these work sheets all of the data were transferred to IBM cards. Sorting and listing into the various treatment conditions, congruent and incongruent groups was accomplished by machine processes. Considerably more than one hundred and fifty thousand separate scores were represented in the listings.

In addition to the 3,431 students who completed all requirements for participation in the study, there were 408 students who completed some of the requirements. This represents the "fall-out" or loss in the experimental population. Because this large a number might represent a distortion in findings, a study was made of the characteristics of this group. The study revealed that 150 (69 girls and 81 boys) could not complete the DF Opinion Survey in the required time. These students were mostly from the low ability special classes. The remaining 258 either moved between the time when motivations were assessed and the time of the experimental treatments, or were absent during part or all of the latter period. An analysis of their motivation and ability scores revealed that a disproportionately large number were from the "not planning college" group. Of the high ability non-college group there were 126 (38 girls and 88 boys). Of the low ability non-college group there were 93 (44 girls and 49 boys). The high ability college group represented 22 (16 girls and 6 boys). In the low ability college group there were 16 (10 boys and 6 girls). Undoubtedly several in the high ability non-college group would have possessed congruent characteristics. This represents an important data loss, but it probably would not modify the general outcome of the study.

Section V

Findings

Before describing the effects of the experimental films on audiences with differing "motivational patterns" it may be interesting and informative to note the overall effects of the film without reference to specific learner personality traits. This may be considered the "classical" comparison in studies assessing the effects of motion pictures. Previous studies by Thurstone (45), Hovland (23) and others (15, 22) have demonstrated that when a group views a film, which is favorable to an object, test scores are generally higher on a post-test than on a comparable pretest, but differences often are not statistically significant. It has frequently been noted, however, that the scores of some individuals within the group have changed markedly. The crucial question in this study is, "Do these individuals (whose scores change markedly) possess some common, identifiable characteristics which are systematically related to the content of the message, and can this relationship be generalized to all individuals if appropriate content is contained in the message?"

Gross comparisons (Table 9) support the usual finding of no significant differences between pre and post-test scores for the 1701 individuals who completed both test forms. It should be noted, however, that (as usual) post-test scores increased for both film groups, while post-test scores decreased for the control group. This indicates that both films had positive effects, but the effects were not significant at the often employed five per cent or higher level of confidence when considering differences between pre and post-tests for the same individuals. In comparison, note Table 10, which reveals that Group X - who saw Film 1-

Table 9

Gross Comparisons Among All Pretested Experimental and Control Groups

Treatment Group	N	Mean Pretest Score	Mean Post-test Score	T-test
X (Saw Film-1)	442	143.67	145.45	.95
Y (Saw Film-2)	439	139.80	140.62	.46
Above Data Combined	881	141.74	143.76	1.56
Z (Control-No film)	820	143.23	141.90	.99

was not significantly different on the pretest from Group Z, who saw no film, yet post-test scores were significantly higher (5 % level) for the film group. Further, Group Y, who saw Film 2 was significantly lower (5 % level) on the pretest than Group Z (no film), but post-test differences were not statistically significant. Group Y (Film 2) was significantly lower (5 % level) than Group X (Film 1) on the pretest and these differences persisted and actually increased past the 1 % level of confidence on the post-test. These data suggest important methodological considerations. First, unlike cognitive testing, where pretesting normally enhances post-test scores, pretesting of affective behavior appears to consistently depress post-test scores. The degree of depres-

Table 10

Significance of Differences Among Pretested Experimental and Control Groups in Gross Comparisons

(Above diagonal-Pretest Comparisons) (Below diagonal-Post-test Comparisons)

	Group X	Group Y	Group Z
Group X		t = 2.15*	t = .28
Group Y	t = 2.61**		t = 2.20*
Group Z	t = 2.14*	t = .80	

* Significant at 5 % level

** Significant at 1 % level

sion is significant. Evidence supporting this latter generalization is derived from the comparisons between experimental and control groups which are significant, yet these differences are masked in experimental groups when they have been pretested. It may well be that previous studies in the affective domain, employing a pretest while reporting nonsignificant results, may be, in fact, misleading because the effects of films may have been significant.

Further evidence of the effects of pretesting in the affective domain was obtained from the 1,730 individuals who were in the randomly selected nonpretested groups. These data can be seen in Table 11 and 12. The difference between the mean of the inferred pretest scores (40) and the mean of the post-test scores for Group "after-only" X (who saw Film 1) is not significant. Note that the inferred differences between the pretest mean scores for the "after-only" X group and the control group (Z) are not significant, while the "after-only" X group is significantly higher (1 % level) than the control group (Z) on the post-test. The inferred pretest mean score for the "after-only" X group was the highest of any group and this chance distribution probably precluded significant differences within the experimental group. If the pretest mean scores were inferred from the mean of the total of all who were

Table 11

Gross Comparisons Among All Nonpretest

Experimental and Control Groups
(Pretest means inferred from pretested groups)

Treatment Group	N	Mean Pretest Score (Inferred)	Mean Post-test Score	t-test
"After-only" - X (Saw Film-1)	398	(143.67)	145.77	1.12
"After-only" - Y (Saw Film-2)	452	(139.80)	145.70	3.35**
Above data combined (Total and averages	850	(141.74)	145.73	3.09**
"After-only" - Z (Control-No film)	880	(143.23)	141.30	1.63

** Significant at 1 % level

Table 12

Significance of Differences Among Nonpretested Experimental and Control Groups in Gross Comparisons
(Above diagonal - (Inferred) pretest comparisons)
(Below diagonal - Post-test comparisons)

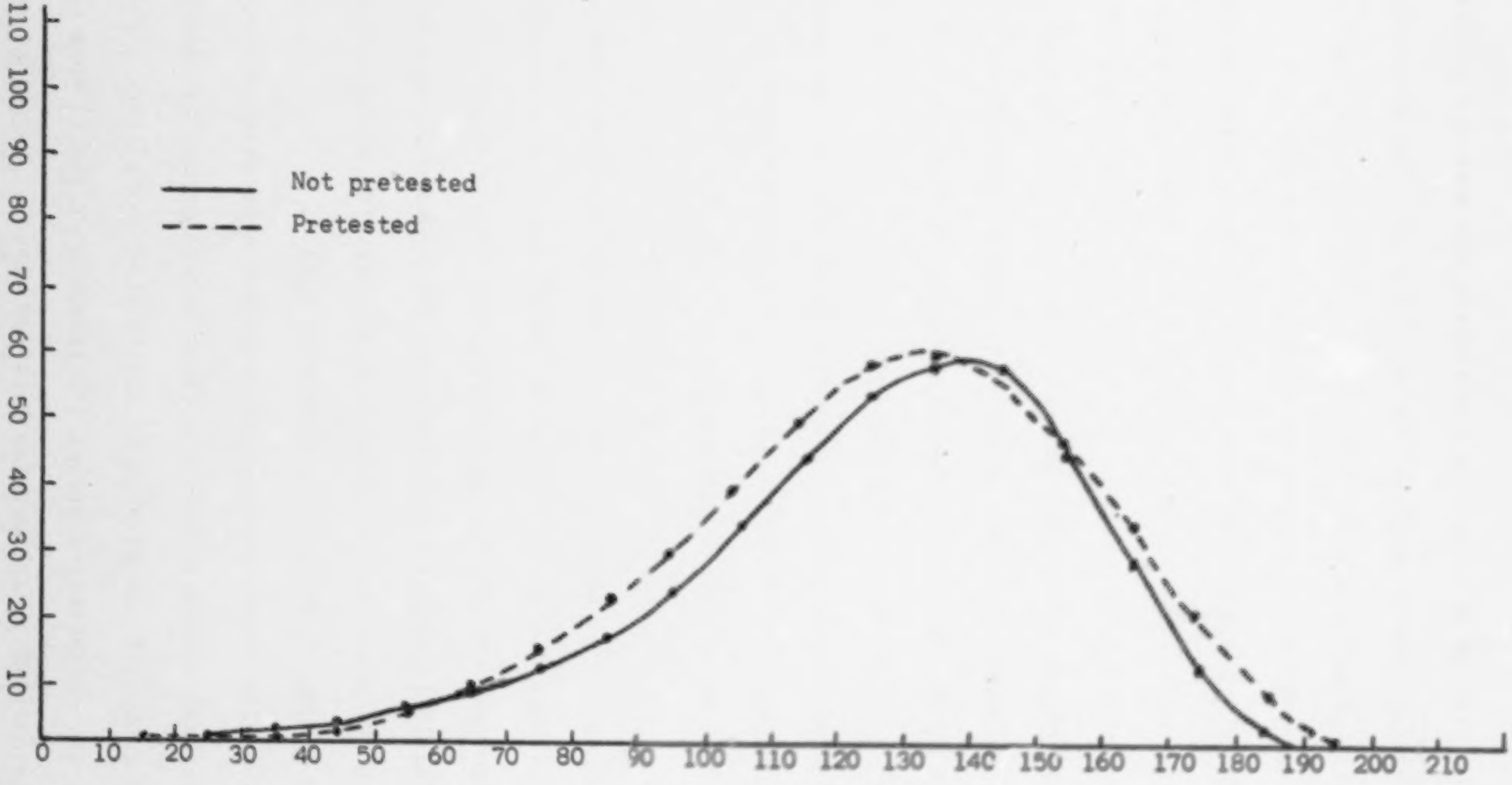
	"After-only" X	"After-only" Y	"After-only" Z
"After-only" X		t = 2.15*	t-.28
"After-only" Y	.04		t - 2.20*
"After-only" Z	2.86**	3.05**	

* Significant at 5 % level
** Significant at 1 % level

pretested (perhaps a more stable measure for all comparisons) then differences between inferred mean pretest scores and post scores for "after-only"-X would be significant at the 5 % level - value of 2.18. Figure 6, graphically illustrates by a smoothed frequency distribution (48) the differences between the distribution of post-test scores for the pretested group (X) and the nonpretested group ("after-only"-X) both having experienced the same film with all other conditions as nearly comparable as was practically possible in a school setting. These differences are not statistically significant.

Figure 6

Smoothed Frequency Distribution of 840 Scores
on Post-test for Groups Who
Saw Film 1. (One Group Not Pretested)



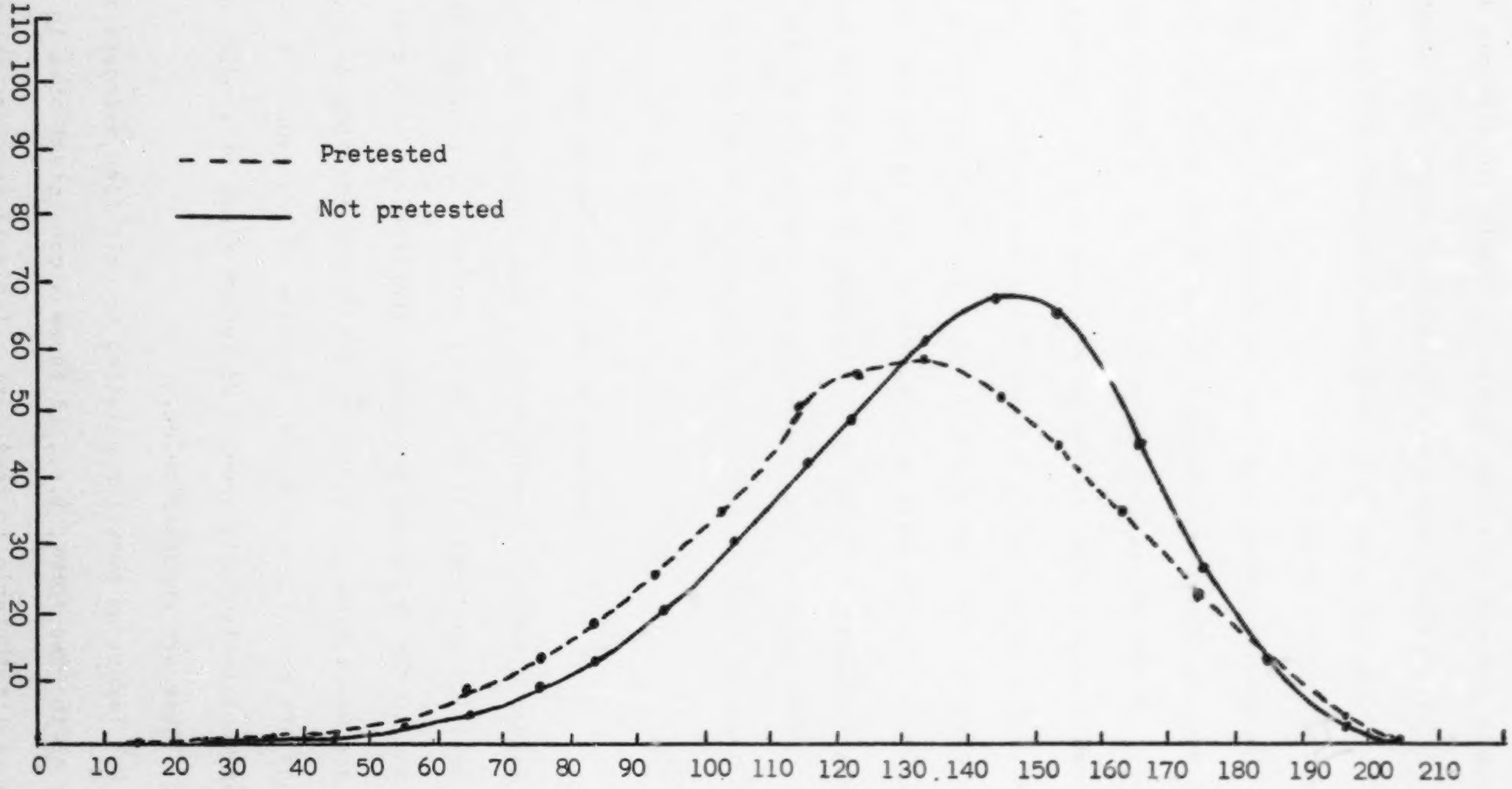
The effects of Film 2 on individuals who were not pretested ("after-only"-Y) can also be seen in Tables 11 and 12. The comparable pretested group (Y) shows no significant gains on the post-test (Table 9) while the "after-only"-Y group shows gains which are significant at the 1 % level of confidence. The inferred mean pretest score, in this instance the lowest of any group (Tables 9 and 10 show pretest scores for Group Y to be significantly lower, 5 % level, from Groups X and Z), undoubtedly enhances the probability of finding the very significant gains which did, in fact, occur. However, in order to make comparable inferences with the "after-only"-X group, the pretest mean scores may be inferred from the mean of the total of all who were pretested. If the inferred mean pretest score is obtained from this total pretested group then differences between mean pre and post-test scores for Group "after-only"-Y would be significant at the 5 % level of confidence, t-value of 2.33.

The t-test value of the differences between mean post-test scores for Groups Y and "after-only"-Y is 2.87 and is significant at the 1 % level of confidence. It should be noted that in this comparison the N's are each over 400 and the mean difference in scores is 5.08. Figure 7 graphically illustrates by a smoothed frequency distribution differences between the distribution of post-test scores for pretested and nonpretested groups, both having experienced Film 2.

The differences between pretested and nonpretested groups is made most evident when data from all experimental groups is combined. Pretested groups (X and Y) show no significant gains after viewing the films, but nonpretested groups ("after-only"-X and Y) show very significant gains (1 % level) between inferred pretest and actual post-test scores. Even when inferred mean pretest scores are derived from the total of all who were pretested (including control groups) differences be-

Figure 7

Smoothed Frequency Distribution of 891 Scores
on Post-test for Groups Who Saw Film 2
(One group not pretested)



tween mean pre and post-test scores is highly significant, t = 2.92.

Differences in control group post-test scores for Group "after-only"-Z (no pretest, no film) show no significant differences from the pretested control group (Z).

The total evidence supports the generalization that pretested audiences are not directly comparable to audiences which have not been pretested. To the degree that these findings are generalizable, it can be expected that post-test scores on attitude scales will be significantly higher, after experiencing a favorable communication, for audiences which have not been pretested than for audiences which have been pretested. It is reasonable to hypothesize, and to suggest for further research, that post-test scores on attitude scales will be significantly lower, after experiencing an unfavorable communication, for audiences which have not been pretested than for audiences which have been pretested.

Studies of The Criterion Measures

Before proceeding further with a description of the findings of the more detailed analyses, it may be of interest to consider the evidence relating to the criterion measures. The findings of a study of this kind are meaningful and useful to the degree that the measures or observations are reliable and valid. Because of the crucial role of the measurement instruments several different kinds of studies were made of them. Three are reported below.

One important question relating to criterion measures is the equivalence of the two forms, i.e., is there a consistent bias in the findings which is attributable to test form. Table 13 provides evidence on this

Table 13

Differences in Means Between Test Forms
by Treatment Groups

		Test Form A		Test Form B		Groups Combined	
Category	Groups	Diff. Between Gp. Means	t	Diff. Between Gp. Means	t	Diff. Between Form Means	t
Experimental Film 1	X vs X^1	X 4.62> X^1	1.82	X^1 3.02> X	1.02	0.32	1.67
Experimental Film 2	Y vs Y^1	Y^1 8.85> Y	3.83**	Y^1 2.33> Y	0.86	5.08	2.87**
No Film Groups	Z vs Z^1	Z^1 3.19> Z	1.99*	Z 4.63> Z^1	2.44*	0.60	0.49
Pre Post Difference	X vs Y	X 5.92> Y	2.54*	X 6.61> Y	2.19*	4.83	2.61**
Pre Post Difference	X vs Z	X 6.10> Z	2.72**	X 3.76> Z	1.46	3.55	2.14*
Pre Post Difference	Y vs Z	Y 0.18> Z	0.08	Z 2.85> Y	1.17	1.28	0.80
Post Only	X^1 vs Y^1	Y^1 7.55> X^1	2.99**	X^1 7.30> Y^1	2.75**	0.07	0.04
Post Only	X^1 vs Z^1	Z^1 1.71> X^1	0.85	X^1 11.41> Z^1	4.73**	4.47	2.86**
Post Only	Y^1 vs Z^1	Y^1 5.84> Z^1	3.28**	Y^1 4.11> Z^1	1.84	4.40	3.05**

* = Significant at 5% Level
** = Significant at 1% Level
Group X = Pre Post Test Film 1
Group X^1 = Post Test Only Film 1
Group Y = Pre Post Test Film 2
Group Y^1 = Post Test Only Film 2
Group Z = Pre Post Test No Film
Group Z^1 = Post Test Only No Film

question. The table is read as follows: For Groups X and X^1 (both have viewed Film 1 but the latter was not pretested) Group X scored an average of 4.62 points higher than Group X^1 on Test Form A. This difference ($t = 1.82$) was not significant at the 5 % level. On Test Form B, Group X^1 (no pretest) scored 3.02 points higher than X. This difference ($t = 1.02$) was also not significant at the 5 % level. When the two groups (X and X^1) are disregarded and all data is combined by test form the differences between the means for the two test forms (0.32) is not significant at the 5 % level, $t = 1.67$. The actual mean post-test scores for both test forms combined for all groups is found in Tables 9 and 11. Each row in the table is read in a comparable manner.

Inspection of Table 13 reveals that in the various comparisons Groups X, Y, Y^1 and Z^1 scored higher on Test Form A with greater frequency than on Test Form B. In each instance mean test scores for these groups were higher on Test Form A. Groups X^1 and Z scored higher on Test Form B with greater frequency than on Test Form A. These latter groups had higher mean scores on Test Form B. In four instances the same groups scored higher on each test form and in five instances different groups scored higher on each test form. These data would not support a consistant pattern relating test form to groups being compared.

The actual difference between mean scores for all individuals completing Test Form A (143.99) and Test Form B (142.27) is 1.72 points. This difference ($t=1.91$) is not significant at the 5 % level. Slightly more Test Forms A were administered on the post-test than Form B -- the percentage being 52.58 percent, Form A and 47.42 percent, Form B. In later analyses all variance due to test form is separately analyzed and reported so that any possible error variance due to this source is eliminated from consideration of other main effects (i.e., film and sex). In the present analysis it would appear that differences in scores resulting from test forms is neither consistent nor large. In four comparisons, differences are evident regardless of test form. In two instances there are no significant differences. In three of the comparisons one group is high on Form A and the comparison group is high on Form B. It is reasonable to conclude that there are no consistent biases attributable to test form.

Another question pertaining to criterion measures involves the order of testing, i.e., does it make a difference if Form A or Form B is administered first in determining differences between pre- and post-tests? Table 14 summarizes the differences found between pre- and post-test scores by test form and treatment group. Figures 8, 9 and 10 graphically illustrate these data for Groups X, Y and Z respectively. From this evidence it is concluded that the order of testing is unimportant in determining differences between pre- and post-tests, i.e., the two versions of the test produce similar differences when used as a pre- or a post-test.

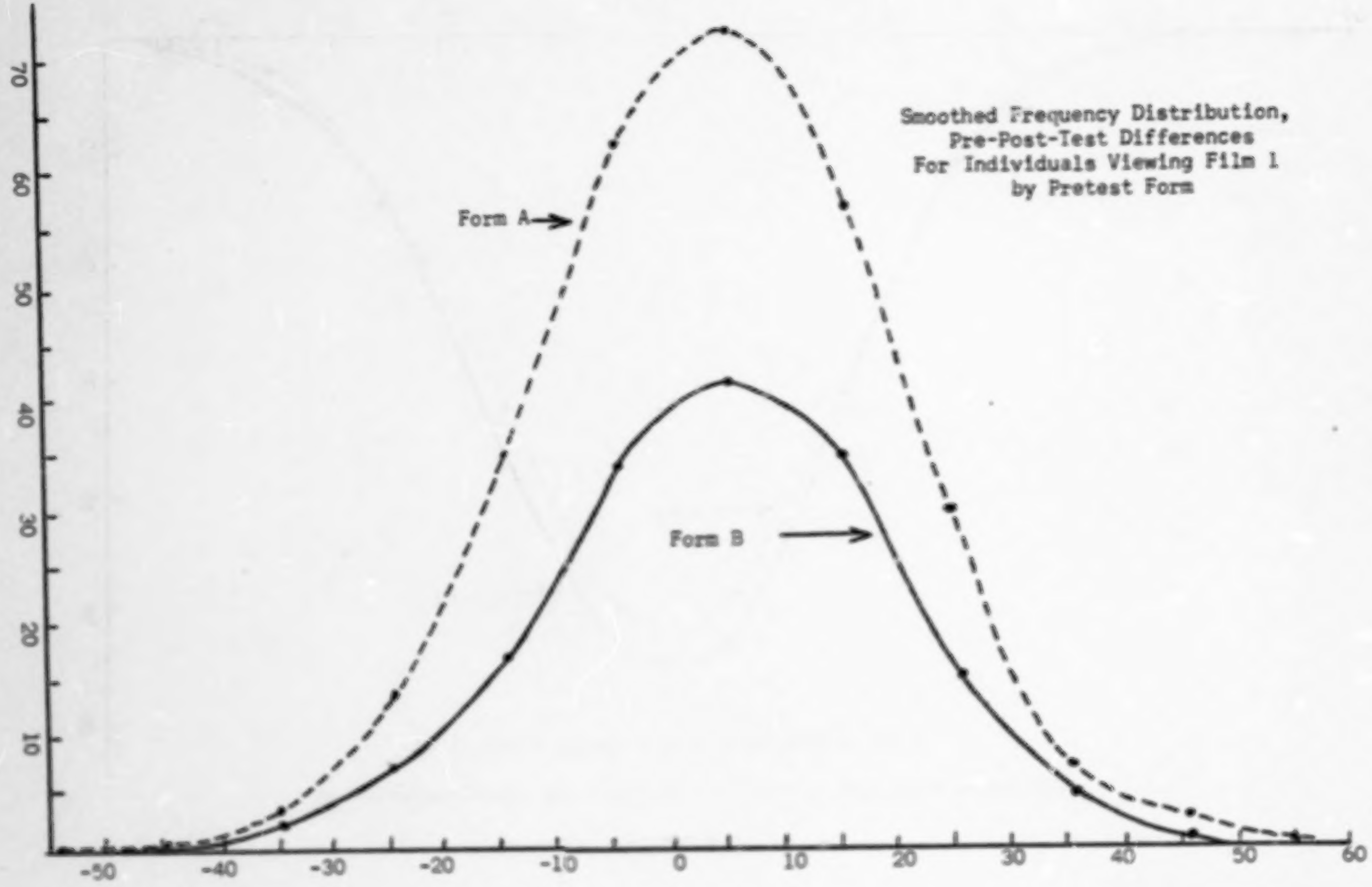
The evidence also makes clear the imperative need for control (no-film) groups. It was impressive to note changes of 40 to 50 or more points on attitude scales for some individuals after viewing one of the experimental films, but it was even more impressive to note differences of equal magnitude occurring in control groups who had not seen a film!

It was observed previously that pre-testing affected post-test scores. Another analysis was aimed at determining whether pre-testing

Table 14
Frequency Distribution of Pre-Post-Test Difference
Scores by Test Form and Treatment Group

	Group X Pre-Post-Test - Film 1		Group Y Pre-Post-Test - Film 2		Group Z Pre-Post-Test - No Film	
	Test Form A	Test Form B	Test Form A	Test Form B	Test Form A	Test Form B
(-) 60-69	0	0	0	0	1	0
(-) 50-59	0	0	0	0	0	0
(-) 40-49	0	0	0	1	0	3
(-) 30-39	2	1	2	2	5	2
(-) 20-29	4	7	9	7	14	22
(-) 10-19	35	13	37	24	68	65
(-) 1-9	67	32	67	51	115	133
0 to +9	85	57	84	60	124	127
10-19	69	35	43	32	51	60
20-29	14	12	6	9	13	8
30-39	7	1	1	2	2	3
40-49	1	0	0	1	0	1
50-59	0	0	0	1	1	0
60-69	0	0	0	0	0	0
Total - N	284	158	249	190	394	424

Figure 8



Smoothed Frequency Distribution,
Pre-Post-Test Differences
For Individuals Viewing Film 1
by Pretest Form

Figure 9

Smoothed Frequency Distribution, Pre-Post-Test Differences for

Individuals Viewing Film 2 by Pretest Form

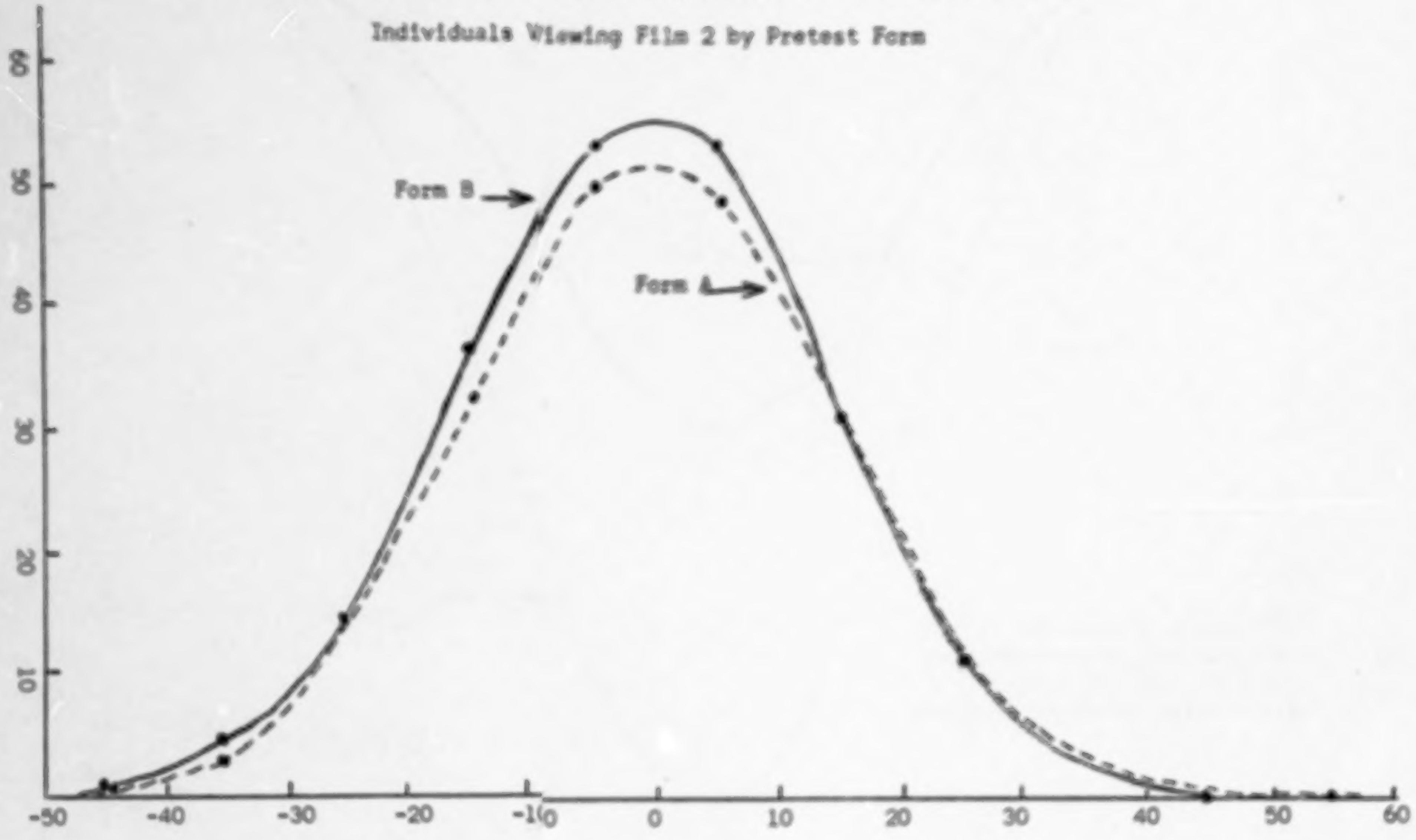
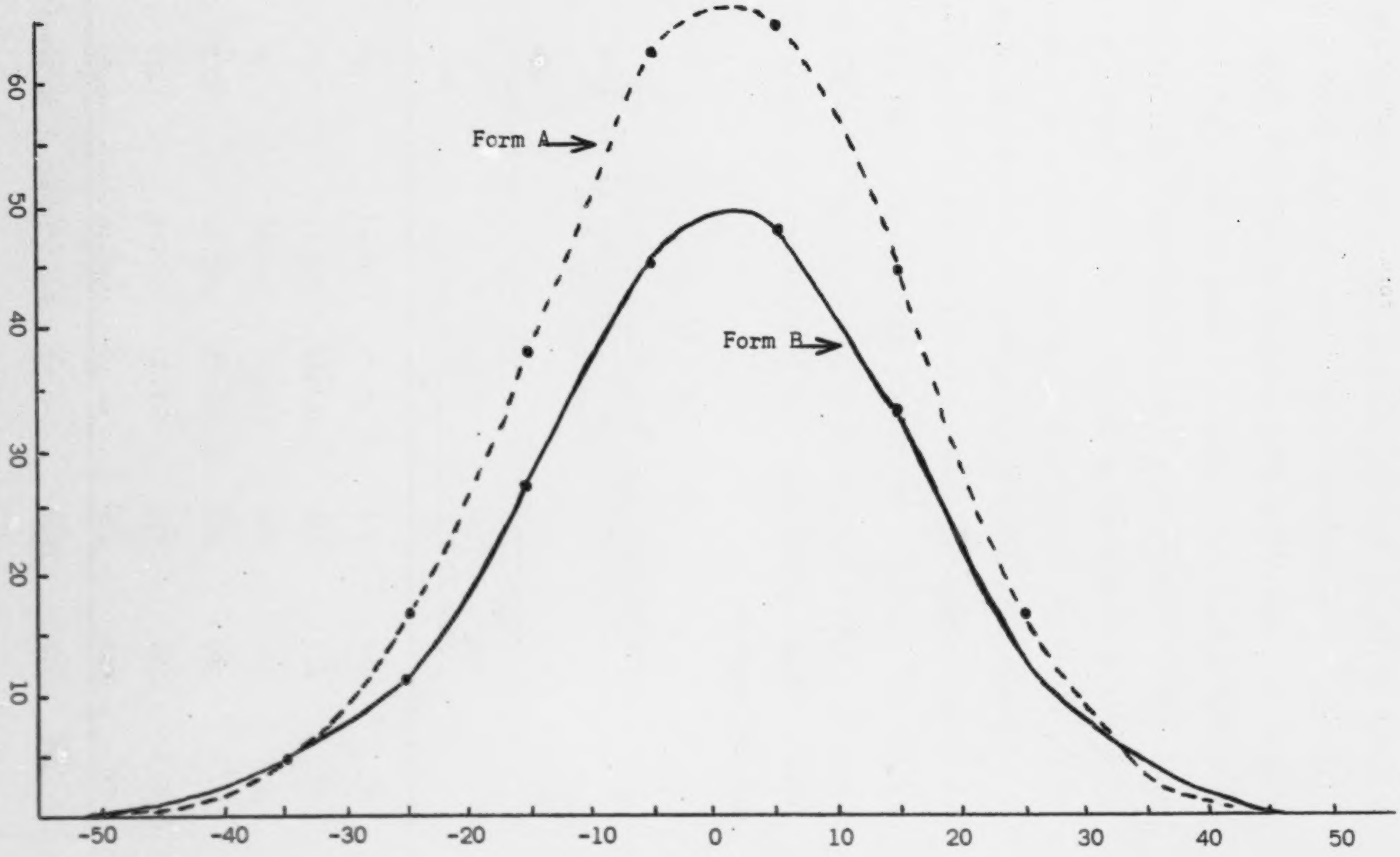


Figure 10

Smoothed Frequency Distribution, Pre-Post-test Differences
for Individuals in Control Groups by Pretest Form



produced consistent bias for one test form. The evidence indicates that while there is no consistent bias due to test form there is additional evidence that pretesting affects scores on both test forms. Table 15 shows that differences between test forms are not significant for the three groups that were pretested, but differences were very significant for groups which were _not_ pretested. These data suggest that pretesting (in the affective domain) tends to produce behavior on a post-test which is consistent with behavior during pretesting regardless of whether or not there is experience relevant to the testing in the interval between pre and post-testing. Individuals _not_ pretested do _not_ perform, as a group, in a manner which would be predicted from comparable pretested groups. Scores on different test forms differ very significantly but not consistently.

Table 15

Post-Test Number, Mean Score, Difference, and Significance of Differences by Treatment Group and Test Form

Group	Post-Test Number Taking Test Form		Post-Test Mean Score by Test Form		Difference in Mean	t=
	A	B	A	B		
X	284	158	147.10	146.49	.61	.53
X^1	212	186	142.48	149.51	7.03	2.77**
Y	249	190	141.18	139.88	1.30	.50
Y^1	202	250	150.03	142.21	7.82	3.24**
Z	394	424	141.00	142.73	1.73	.88
Z^1	463	419	144.19	138.10	6.09	4.01**
Total N	1804	1627				

** - Significant at 1% level

There may be several explanations for this phenomenon. A plausible one is that taking a test is a more vital learning experience than most of the typical school experiences. In this instance it is possible that the most impressive or influential learning experience affecting criterion test behavior was the pretest activity. The interaction with the relevant learning experience may be explained in terms of "set". For example, within any test form it is likely that only certain items are critical in identifying differences both within and among respondents. Apparently the pretest experience provides a set for many individuals to respond in a comparable way to discriminating items on both forms of the test. For those who did not have a pretest experience this "set" was absent and individuals responded to the discriminating items in an inconsistent manner producing inconsistent and significant differences.

Experimental Design Analyses

The experimental design described in Section I should be reviewed before proceeding with these analyses. The treatment groups may be briefly summarized as follows:

Congruent Groups				Incongruent Groups			
Pre Post Groups		Post Only Groups		Pre Post Groups		Post Only Groups	
A	B	C	D	E	F	G	H
Test Film Test	Test - Test	- Film Test	- - Test	Test Film Test	Test - Test	- Film Test	- - Test

The first series of comparisons were aimed at determining whether the experimental communication produced an effect on any group. To make these determinations a test of significance was conducted between the mean post-test score of groups which received a communication and the mean of the corresponding control group which did not receive the message.

Table 16 indicates effects of the film on congruent pretested groups. It should be noted that while the pretest scores are slightly higher for both sexes for control groups, the post-test scores average 10.29 points higher for experimental groups. While this gain is approximately twice that of any of the previous gross comparisons, it will be observed in Table 17 that this gain is not statistically significant at the 5% level of confidence.

Some comment on the research design and statistical procedure is in order at this point. The extension to Solomon's (40) design developed for this project, required the selection of individuals with characteristics relevant to specific learning experiences and random assignment of these individuals to various pretested and after-only experimental and control groups. While adding a significant dimension to research methodology the design employed in this study involves large numbers of subjects. Even with the total N of 3,431 used in this study, after corrections were made for disproportionality by removing cases in certain cells by use of a table of random numbers(49), applying all the criteria for congruity and providing for control groups, only 10 girls (Film 1) and 7 boys (Film 2) remained in one criterion group. It should be recalled that all subjects of low ability, all subjects who were planning

Table 16

Mean Scores Groups A and B by Sex and Test Form

		Girls				Boys				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Congruent Group A	A	4	116.75	123.25	6.50	3	121	131.00	10.00	8.00
	B	6	127.33	138.00	10.67	4	128.5	138.75	10.25	10.50
	Total	10	123.10	132.10	9.00	7	125.29	135.43	10.14	9.47
Congruent Group B	A	16	122.25	120.69	-1.56	12	130.90	129.75	-1.15	-1.41
	B	24	127.63	127.58	- .05	16	122.94	121.87	-1.07	- .46
	Total	40	125.48	124.82	- .62	28	126.36	125.25	-1.11	- .82

Table 17

Analysis of Variance
Groups A and B by Sex and Test Form

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	975.812	975.812	1.514
Sex	1	20.825	20.825	- -
Test	1	176.576	176.576	- -
Group X Sex	1	27.771	27.771	- -
Group X Test	1	398.587	398.587	- -
Sex X Test	1	877.030	877.030	1.360
Group X Sex X Test	1	54.675	54.675	- -
Within Subgroup	77	49,624.772	644.477	
Total	84	52,156.048		

college, and all subjects with differing motivational patterns were classified as incongruent with the message. A suggested improvement in the design developed for this study would be to reduce the N in control groups by 50 % when sex is one of the criteria for congruity. It was discovered that the actual usable N in control groups was twice as large as experimental groups because when randomly assigning all subjects to experimental treatments approximately an equal number of both sexes were placed in each group. Since subjects of only one sex were utilized from any control group, the same control group could have been used for both sexes. This procedure would have resulted in experimental and control groups of approximately equal size and, assuming the gains would be comparable for the added numbers, the differences may have been significant despite the known effects of the pretest in depressing scores on the post-test.

Table 18 contains comparable information for the "after-only" congruent groups. Here it can be seen that the post-test scores (actually the post-treatment-test scores) for the Film 1 experimental group (girls) average 18.77 points higher than the control group and the post-test scores for the Film 2 experimental group (boys) averaged 33.41 points higher than the comparable control group. Table 19 shows these differences between experimental and control groups to be significant at the 1 % level of confidence. Differences between experimental treatments were significant at the 5 % level and indicate that Film 2 produced comparatively greater change than Film 1. It should be noted that the control group scores were considerably lower for the boys than for the girls and, therefore, the potentialities for change were greater for Film 2.

Perhaps the most noticeable observation, again, is the apparent effect of the pre-test. Gains in post-test scores in this comparison vary from approximately four to seven times more than those of the previous gross comparisons. This should not be interpreted to mean that the effect of the films on congruent groups is from 4 to 7 times greater than on heterogeneous audiences. It may mean this, but there is no way of determining percentage of increased effects when there is no proof of equal units of measurement in the criterion instruments. One would expect that units (points) would become more difficult (larger) as one moved up the scale, i.e., a change from 120 to 125 would be easier (smaller units) than a change from 140-145, but there is no evidence to support or refute this notion. It was considered most appropriate in the

Table 18

Mean Scores Groups C and D by Sex and Test Form

		Girls				Boys				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Congruent Group C	A	8	*	135.87	*	4	*	139.75	*	*
	B	7	*	147.43	*	7	*	137.57	*	*
	Total	15	*	141.27	*	11	*	138.36	*	*
Congruent Group D	A	16	*	118.75	*	8	*	93.625	*	*
	B	14	*	125.00	*	14	*	111.43	*	*
	Total	30	*	122.50	*	22	*	104.95	*	*

* No Pretest

Table 19

Analysis of Variance
Groups C and D by Sex and Test Form

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	11,135.410	11,135.410	17.226**
Sex	1	2,843.076	2,843.076	4.398*
Test	1	983.524	983.524	1.521
Group X Sex	1	826.361	826.361	1.218
Group X Test	1	31.044	31.044	- -
Sex X Test	1	728.032	728.032	1.126
Group X Sex X Test	1	697.430	697.430	1.078
Within Subgroup	70	45,249.572	646.422	- -
Total	77	62,504.449		

** = Significant at 1 % level
* = Significant at 5 % level

present study to report the actual scores obtained and reserve questions relating to degree of change to future studies.

Table 20 indicates essentially that neither film had much effect on incongruent groups. This evidence is substantiated by the analysis in Table 21, which reveals that differences between experimental and control groups are not statistically significant. It is important to note that incongruent groups are considerably larger (in this instance a total N of 225 in experimental groups) and that mean scores are considerably higher as a result of requiring individuals assigned to congruent groups to have pretest scores of 150 or less in the case of pretested subjects and scores of 3 or below on "college plans" on the Y. E.

Table 20

Mean Scores Groups E and F by Sex and Test Form

		Girls				Boys				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Incongruent Group E	A	59	147.19	146.78	-0.41	60	152.15	153.40	1.25	.51
	B	50	148.56	153.34	4.78	56	149.84	152.07	2.23	3.14
	Total	109	147.82	149.79	1.97	116	151.03	152.76	1.73	1.84
Incongruent Group F	A	118	151.49	149.56	-1.93	120	149.39	147.10	-2.29	-2.11
	B	100	153.71	151.58	-2.13	112	151.34	150.65	-0.69	-1.37
	Total	218	152.51	150.49	-2.02	232	150.33	148.81	-1.52	-1.762

Table 21

Analysis of Variance
Groups E and F by Sex and Test Form

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	431.236	431.236	- -
Sex	1	2.613	2.613	- -
Test	1	1,223.888	1,223.888	1.739
Group X Sex	1	807.000	807.000	1.146
Group X Test	1	1.777	1.777	- -
Sex X Test	1	112.088	112.088	- -
Group X Sex X Test	1	829.990	829.990	1.179
Within Subgroup	667	469,353.136	703.677	
Total	674	472,761.728		

P. instrument for subjects who are not pretested. This information will be helpful in understanding later comparisons between congruent and incongruent groups where matching is required on pretest scores. In a later comparison the mean pretest scores of incongruent groups is forced to be comparable to mean pretest scores of congruent groups.

Tables 22 and 23 are a comparison of incongruent "after-only" experimental and control groups. Again, the evidence indicates that while the mean scores are slightly higher for experimental groups, the differences are not statistically significant at the 5 % level.

A review of these first four comparisons provides good evidence that the experimental films had little effect on incongruent groups. At the same time, there appears to be no question that the films did affect congruent groups. One explanation for greater effects among congruent

Table 22

Mean Scores Groups G and H by Sex and Test Form

		Girls				Boys				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Incongruent Group G	A	50	*	152.20	*	50	*	154.76	*	
	B	50	*	156.62	*	50	*	148.20	*	
	Total	100	*	154.41	*	100	*	151.48	*	
Incongruent Group H	A	86	*	149.85	*	86	*	149.53	*	
	B	86	*	152.51	*	86	*	148.83	*	
	Total	172	*	151.18	*	172	*	149.35	*	

* No Pretest

Table 23

Analysis of Variance
Groups G and H by Sex and Test Form

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	812.803	812.803	1.339
Sex	1	795.890	795.890	1.311
Test	1	31.066	31.066	- -
Group X Sex	1	20.637	20.637	- -
Group X Test	1	189.461	189.461	- -
Sex X Test	1	1,391.360	1,391.360	2.292
Group X Sex X Test	1	415.183	415.183	- -
Within Subgroup	536	325,348.005	606.992	
Total	543	329,004.405		

groups was the greater potential for change indicated by the lower pretest experimental and control group scores. With large differences in mean score between experimental and control groups in the "after-only" congruent group it is inferred that differences are a function of the experimental films and that the films do, in fact, produce a change in post-treatment attitude scores. While the differences were not statistically significant in pre-post congruent groups, mean post-test scores were considerably higher than control groups and with the evidence that pretesting depresses post-test scores it is possible that the films had an effect on these groups even though effects were masked by the pretest.

Control Groups

The next series of analyses was aimed specifically at control groups. The purpose was to determine the possible effects of uncontrolled stimuli operating in a uniform manner on groups of like motivational patterns. The possibility existed that there were other factors (uncontrolled stimuli) besides the film operating to produce change, i.e., while some film groups (congruent) did score significantly higher on post-tests than comparable control groups, in an analysis of pre-post differences (in contrast to post-test only differences) for groups not viewing an experimental film, was there evidence to indicate the presence of other change agents?

Tables 24 and 25 indicate there were no significant changes between pre-post-test scores for pretested congruent groups; Tables 26 and 27 analyze differences between pretested and "after-only" congruent control groups. No significant differences were found. Comparable analyses were conducted for incongruent control groups. Tables 28 and 29 indicate no significant changes between pre-post-test scores for pretested incongruent groups. Tables 30 and 31 analyze differences between pretested and "after-only" incongruent control groups. Again, no significant differences. The evidence indicates there were no significant changes in mean scores between the pretest and the post-test for any group not receiving an experimental treatment. The conclusion is made that differences in scores are not the function of uncontrolled stimuli.

Congruency-Incongruency

In order to determine whether the experimental films produced a differential effect on groups of unlike motivational patters, comparisons were made between the mean post-test scores of individuals in Group A who could be matched with individuals in Group E on the basis of pretest scores. Tables 32 and 33 report this analysis. Differences are significant at the 1 % level of confidence and represent mean score

Table 24

Mean Scores Group B by Sex and Test Form

		Girls				Boys				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Congruent No Film Group B	A	25	128.16	127.80	-0.36	17	123.59	121.88	-1.71	-0.91
	B	17	122.59	121.59	-1.00	12	130.90	129.75	-1.15	-1.06
	Total	42	125.90	125.28	-0.62	29	126.62	125.14	-1.48	-0.97

Table 25

Analysis of Variance Pre-Post-Test Scores
Group B by Sex and Test Form

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	34	34	- -
Sex	1	3	3	- -
Test	1	0	0	- -
Group X Sex	1	4	4	- -
Group X Test	1	4	4	- -
Sex X Test	1	3	3	- -
Group X Sex X Test	1	1,513	1,513	2.93
Within Subgroup	134	69,126	516	
Total	141	70,687		

Table 26

Mean Scores Groups B and D
by Sex and Test Form

Group	Test Form	Girls N	Girls Pre	Girls Post	Girls Mean Gain	Boys N	Boys Pre	Boys Post	Boys Mean Gain	Gain Both Sexes
Congruent Pretested No Film Group B	A	16	121.44	120.69	-.75	7	132.71	134.29	1.58	-.04
	B	16	126.19	128.19	2.00	15	122.53	118.33	-4.20	-1.00
	Total	32	123.81	124.44	.63	22	125.77	123.41	-2.36	-.59
Congruent After-only No Film Group D	A	16	*	118.75	*	7	*	107.00	*	*
	B	16	*	124.69	*	15	*	111.27	*	*
	Total	32	*	121.72	*	22	*	109.91	*	*

* No Pretest

Table 27

Analysis of Variance Groups B and D
by Sex and Test Form

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	1,602.370	1,602.370	3.483
Sex	1	632.369	632.369	1.374
Test	1	43.584	43.584	- -
Group X Sex	1	1,235.976	1,235.976	2.686
Group X Test	1	79.485	79.485	- -
Sex X Test	1	496.779	496.779	1.079
Group X Sex X Test	1	424.269	424.269	- -
Within Subgroup	100	46,002.909	460.029	
Total	107	50,517.741		

Table 28

Mean Scores Group F by Sex and Test Form

Group	Test Form	Girls N	Girls Pre	Girls Post	Girls Mean Gain	Boys N	Boys Pre	Boys Post	Boys Mean Gain	Gain Both Sexes
Incongruent No Film Group F	A	112	152.30	150.28	-2.02	112	150.38	147.38	-3.00	-2.51
	B	112	153.99	152.70	-1.29	112	151.34	150.65	-0.69	-0.99
	Total	224	153.15	151.49	-1.66	224	150.86	149.02	-1.88	-1.77

Table 29

Analysis of Variance Pre-Post-Test Scores Group F by Sex and Test Form

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	653.356	653.356	1.085
Sex	1	1,235.611	1,235.611	2.053
Test	1	936.803	936.803	1.556
Group X Sex	1	34.613	34.613	- -
Group X Test	1	161.662	161.662	- -
Sex X Test	1	32.862	32.862	- -
Group X Sex X Test	1	2.717	2.717	- -
Within Subgroup	888	534,364.715	601.762	
Total	895	537,422.339		

Table 30

Mean Scores Groups F and H by Sex and Test Form

		Girls				Boys				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Incongruent Pretested No Film Group F	A	112	152.30	150.28	-2.02	112	150.38	147.38	-3.00	-2.51
	B	112	153.99	152.70	-1.29	112	151.34	150.65	-0.69	-0.99
	Total	224	153.15	151.49	-1.66	224	150.86	149.02	-1.84	-1.75
Incongruent After-only No Film Group H	A	86	*	149.85	*	86	*	149.59	*	*
	B	86	*	153.09	*	86	*	149.10	*	*
	Total	172	*	151.47	*	172	*	149.35	*	*

* No Pretest

Table 31

Analysis of Variance Groups F and H by Sex and Test Form

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	494.770	494.770	- -
Sex	1	971.123	971.123	1.669
Test	1	4.395	4.395	- -
Group X Sex	1	1.302	1.302	- -
Group X Test	1	354.459	354.459	- -
Sex X Test	1	72.122	72.122	- -
Group X Sex X Test	1	242.425	242.425	- -
Within Subgroup	784	455,977.373	581.603	
Total	791	458,117.969		

Table 32

Mean Scores Groups A and E by Sex and Test Form

Group	Test Form	Girls				Boys				Gain Both Sexes
		N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Congruent Group A	A	10	118.20	124.40	6.20	4	126.00	137.00	11.00	7.57
	B	6	127.33	138.00	10.67	8	123.88	128.25	4.37	7.07
	Total	16	121.63	129.50	7.87	12	124.58	131.16	6.58	7.32
Incongruent Group E	A	10	118.20	103.70	-14.50	4	126.00	117.50	-8.50	-12.29
	B	6	127.17	114.83	-12.34	8	123.88	115.25	-8.63	-10.21
	Total	16	121.56	107.88	-13.68	12	124.58	116.00	-8.88	-11.50

Table 33

Analysis of Variance Groups A and E
by Sex and Test Form

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F
Group	1	4,978	4,978	11.39**
Test	1	492	492	1.12
Sex	1	328	328	.75
Group X Test	1	32	32	.07
Group X Sex	1	143	143	.33
Test X Sex	1	817	817	1.87
Group X Test X Sex	1	37	37	.85
Within Subgroup	48	20,982	437	
Total	55	27,809		

** 7.19 needed for significance at 1 % level.

differences of 21.62 points for Film 1 and mean score differences of 15.16 points for Film 2. It will be noted that post-test scores for incongruent groups dropped appreciably while post-test scores for congruent groups raised appreciably. The phenomenon of individuals with relatively low pretests scoring still lower on post-tests and individuals with relatively high pretests scoring still higher on post-tests was observed very frequently in the total population. The gross comparisons indicated slightly higher (non significant) post-test scores for the total pretested groups. It should be noted that in previous comparisons among incongruent groups the mean pretest scores were much higher than in the present analysis. The low pretest scores (resulting from matching with those congruent groups) probably is related to the lowered post-test scores for incongruent groups. The mean gain for congruent groups is comparable to gains reported previously for pretested congruent groups.

In comparing pretested congruent with "after-only" congruent groups (Tables 34 and 35) the characteristic higher scores for non-pretested groups again are present. However, the mean differences (8.75 for Film 1 and 6.91 for Film 2) are not statistically significant at the 5 % level. In a similar analysis between pretested incongruent and "after-only" incongruent groups (Tables 36 and 37) post-test scores are slightly higher for the "after-only" group for Film 1 but slightly lower for Film 2. In neither instance are the differences statistically significant.

From the evidence provided by these analyses it is inferred that the effectiveness of motion pictures is a function of motivational pattern. Groups whose motivational patterns were congruent with experimental films scored significantly higher on post-tests than groups whose

Table 34

Mean Score: Groups A and C by Sex and Test Form

		Girls				Boys				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Congruent Group A	A	10	118.20	124.40	6.20	4	126.00	137.00	11.00	7.57
	B	6	127.33	138.00	10.67	8	123.88	128.25	4.37	7.07
	Total	16	121.63	129.50	7.87	16	124.58	131.17	6.58	7.32
Congruent Group C	A	10	*	129.80	*	4	*	139.75	*	
	B	6	*	132.33	*	8	*	137.25	*	
	Total	16	*	138.25	*	12	*	138.08	*	

* No Pretest

Table 35

Analysis of Variance Groups A and C
by Sex and Test Form

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F
Group	1	888.018	888.018	- -
Sex	1	7.715	7.715	- -
Test	1	840.875	840.875	- -
Group X Sex	1	11.523	11.523	- -
Group X Test	1	154.447	154.447	- -
Sex X Test	1	1,775.908	1,775.908	1.067
Group X Sex X Test	1	47.270	47.270	- -
Within Subgroup	48	79,867.084	1,663.897	
Total	55	83,592.840		

motivational patterns were incongruent with experimental films. Non-pretested congruent groups had higher post-test scores than pretested congruent groups; however, differences were not statistically significant. Differences between non-pretested congruent and incongruent groups would have been even more significant than they were found to be between comparable pretested groups because non-pretested incongruent groups varied little from pretested incongruent groups. The evidence indicated that the films had little effect on incongruent groups. Differences between incongruent experimental and control groups were not statistically significant.

Reversed Analyses

Up to this point in the analyses the findings approximated those which were expected with the exception of the magnitude of the effects of the pretest and the relatively small numbers meeting the criteria

Table 36

Mean Scores Group E and G
by Sex and Test Form

Group	Test Form	Girls N	Girls Pre	Girls Post	Girls Mean Gain	Boys N	Boys Pre	Boys Post	Boys Mean Gain	Gain Both Sexes
Incongruent Group E	A	50	146.10	147.44	1.34	50	151.66	152.48	.82	1.08
	B	50	148.56	153.34	4.78	50	149.84	151.94	2.10	3.44
	Total	100	147.33	150.39	3.06	100	150.75	152.21	1.46	2.26
Incongruent Group G	A	50	*	152.20	*	105	*	154.90	*	*
	B	50	*	156.62	*	105	*	147.23	*	*
	Total		*	154.41	*	210	*	151.07	*	*

* No Pretest

Table 37

Analysis of Variance Groups E and G by Sex and Test Form

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F
Group	1	270.603	270.603	- -
Sex	1	30.803	30.803	- -
Test	1	64.803	64.803	- -
Group X Sex	1	564.062	564.062	- -
Group X Test	1	351.562	351.562	- -
Sex X Test	1	1,896.602	1,896.602	2.673
Group X Sex X Test	1	128.823	128.823	- -
Within Subgroup	392	278,109.740	709.463	
Total	399	281,416.998		

Table 38

Mean Scores, Groups A and B by Sex and Test Form
(Experimental Treatments Reversed)

		Boys				Girls				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Congruent Group A	A	3	122.33	113.33	-9.00	4	136.25	141.50	5.25	-0.86
	B	3	116.67	124.33	7.67	6	113.50	114.83	1.33	+3.44
	Total	6	119.50	118.83	-.67	10	122.60	125.50	2.90	+1.56
Congruent Group B	A	12	130.92	129.75	-1.17	16	124.94	123.81	-1.13	-1.15
	B	12	118.50	112.33	-617	24	127.75	127.58	-.17	-2.17
	Total	24	124.13	121.04	-3.09	40	126.63	126.08	-.55	-1.50

Table 39

Analysis of Variance Groups A and B
by Sex and Test Form
(Experimental Treatments Reversed)

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F
Group	1	18.050	18.050	- -
Sex	1	538.680	538.680	- -
Test	1	568.028	568.028	- -
Group X Sex	1	8.002	8.002	- -
Group X Test	1	180.578	180.578	- -
Sex X Test	1	528.908	528.908	- -
Group X Sex X Test	1	2,567.197	2,567.197	4.189*
Within Subgroup	72	44,118.357	612.754	
Total	79	48,527.800		

* Significant at 5 % level.

for assignment to congruent groups. In the final experiment, Film 1 (intended for congruent girls) was shown to congruent boys, and Film 2 (intended for congruent boys) was shown to congruent girls. The purpose was to determine whether differential effects were produced because of the relationship between the pattern and the film designed for that pattern or because of the nature of the motivational pattern alone, i.e., whether another film would produce differential effects. For this reason two experimental films were produced for the study and two congruent groups were identified - each to be congruent with one film.

One finding in these analyses was entirely unexpected. Tables 40 and 41 show clearly that experimental groups for both sexes scored significantly higher than control groups and females scored signifi-

Table 40

Mean Scores Groups C and D by Sex and Test Form
(Experimental Treatments Reversed)

Group	Test Form	Boys N	Boys Pre	Boys Post	Boys Mean Gain	Girls N	Girls Pre	Girls Post	Girls Mean Gain	Gain Both Sexes
Congruent Group C	A	3	*	126.33	*	5	*	166.80	*	*
	B	5	*	135.20	*	7	*	148.43	*	*
	Total	8	*	131.88	*	12	*	156.08	*	*
Congruent Group D	A	6	*	100.67	*	10	*	125.6+	*	*
	B	10	*	111.60	*	14	*	123.93	*	*
	Total	16	*	107.50	*	24	*	124.63	*	*

* No Pretest

Table 41

Analysis of Variance Groups C and D
by Sex and Test Form
(Experimental Treatments Reversed)

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F
Group	1	10,925.209	10,925.209	121.287**
Sex	1	5,467.803	5,467.803	60.701**
Test	1	21.025	21.025	- -
Group X Sex	1	160.555	160.555	1.782
Group X Test	1	404.999	404.999	4.496*
Sex X Test	1	1,027.723	1,027.723	11.409**
Group X Test X Sex	1	142.625	142.625	1.583
Within Subgroup	52	4,684.045	90.077	
Total	59	22,833.984		

cantly higher than males. Every conceivable check was made on the corrections for disproportionality *(random elimination procedures)* and the statistical calculations. The randomly selected cases were representative of total data collected. There appears to be no doubt that the congruent girls (security minded) were significantly influenced by Film 2 (intended for boys). The mean score being 31.45 points higher than the control group. This is considerably higher than the 18.77 points (Table 18) recorded for girls with comparable characteristics who saw the film intended for girls. The two control group scores (girls Tables 18 and 40) were very comparable. The effect of Film 1 (intended for girls) on boys was also very significant. The mean score was 24.38 points higher than the control group. This effect is not as large as that produced by Film 2 (intended for boys) on boys, which was 33.41 points, but it was sizeable. Again, both control group scores (boys Tables 18 and 40) were comparable.

This finding seemed incomprehensible until Film 2 (intended for boys) was viewed in the context of a girl with the characteristics described in Section II. A review of the script (Appendix D) may provide some cues as to possible interpretations a girl (with the identified characteristics) might give to the film. It would certainly seem reasonable that a security minded girl, after viewing Film 2, would have good reason to perceive education beyond the high school in a more favorable light. Something comparable might be said for congruent boys who saw Film 1. Those boys who possessed the characteristics for congruency with Film 2 (dislike for detail, high in ability and realistic thinking, etc.) very reasonably would be influenced by the content of Film 1; however, it is likely that they would not be influenced to the degree that they would be influenced by the content of Film 2.

This finding is most significant because it suggests that it is not the relevancy of the message to the motivational pattern of the learner _as perceived by the communicator_, but rather the relevancy of the message to the motivational pattern of the learner _as perceived by the learner_ that is of most vital importance to the development of mass media messages intended to change attitudes. This further suggests empirical testing of all segments of the message (i.e., instructional programing procedures) to determine the message which is, in fact, perceived by learners of like characteristics to be most congruent with their existing motivational pattern.

Tables 42 and 43 reveal that incongruent experimental and control

Table 42

Mean Scores Groups E and F by Sex and Test Form
(Experimental Treatments Reversed)

Group	Test Form	Boys				Girls				Gain Both Sexes
		N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Incongruent Group E	A	49	150.47	154.94	+4.47	49	147.63	149.39	+1.76	+3.11
	B	49	154.14	155.82	+1.68	49	145.67	147.26	+1.59	+1.63
	Total	98	152.30	155.38	+3.08	98	146.65	148.33	+1.68	+2.38
Incongruent Group F	A	112	150.38	147.38	-3.00	112	152.30	150.28	-2.02	-2.51
	B	112	151.34	150.65	-0.69	112	153.99	152.70	-1.29	-0.99
	Total	224	150.86	149.02	-1.84	224	153.15	151.49	-1.66	-1.75

Table 43

Analysis of Variance Groups E and F
by Sex and Test Form
(Experimental Treatments Reversed)

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	347.993	347.993	- -
Sex	1	29.145	29.145	- -
Test	1	513.393	513.393	- -
Group X Sex	1	3,092.064	3,092.064	4.645*
Group X Test	1	408.485	408.485	- -
Sex X Test	1	91.691	91.691	- -
Group X Test X Sex	1	39.130	39.130	- -
Within Subgroup	636	423,327.794	665.609	
Total	643	427,849.695		

* Significant at 5 % level.

groups are not significantly different on post-test scores after viewing the films intended for the opposite sex. There is an interaction between the two groups and sex which is significant at the 5 % level. In the experimental group the mean post-test score of the boys is 7.05 points higher than the mean post-test score of the girls, and in the control group the mean post-test score is 2.47 points higher for the girls than it is for the boys. The most significant observation, however, may be the consistency of the data with the previous analyses involving comparable groups who viewed the same films (Tables 20 and 21). Tables 44 and 45 provide similar evidence for non-pretested groups and, again, bear a striking resemblance to comparable tables in the earlier analysis (Tables

Table 44

Mean Scores Groups G and H by Sex and Test Form
(Experimental Treatments Reversed)

		Boys				Girls				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Incongruent Group G	A	49	*	150.06	*	49	*	149.02	*	*
	B	49	*	160.49	*	49	*	152.04	*	*
	Total	98	*	155.27	*	98	*	150.53	*	*
Incongruent Group H	A	86	*	149.53	*	86	*	149.85	*	*
	B	86	*	148.83	*	86	*	152.51	*	*
	Total	172	*	149.35	*		*	151.18	*	*

* No Pretest

Table 45

Analysis of Variance Groups G and H by Sex and Test Form (Experimental Treatments Reversed)

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	776.116	776.116	1.282
Sex	1	18.519	18.519	- -
Test	1	1,486.696	1,486.696	2.456
Group X Sex	1	1,471.952	1,471.952	2.431
Group X Test	1	892.306	892.306	1.475
Sex X Test	1	3.267	3.267	- -
Group X Sex X Test	1	968.561	968.561	1.600
Within Subgroup	532	322,034.065	605.327	
Total	539	327.651.482		

22 and 23).

Tables 46 and 47 compare pretested congruent and incongruent experimental groups when experimental treatments are reversed. Here it should be noted that Film 2 produced a greater effect on the congruent group than on the incongruent group; however the comparative effect on the incongruent group was greater than the previous analysis indicated (Tables 32 and 33). The incongruent experimental groups still went down appreciably, but not nearly to the extent of the previous instance when Film 1 was viewed. The pretested congruent boys, in contrast, were not positively affected by Film 1. The same may be said of the incongruent experimental boys, but this was equally true in the earlier analyses when a comparable group experienced Film 2. No differences were statistically

Table 46

Mean Scores Groups A and E by Sex and Test Form
(Experimental Treatments Reversed)

		Girls				Boys				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Congruent Group A	A	7	133.71	136.86	+3.15	9	117.44	110.89	-6.55	-2.31
	B	6	113.50	114.83	+1.33	3	116.67	124.33	+7.66	+3.44
	Total	13	124.38	126.69	+2.31	12	117.25	114.25	-3.50	-0.24
Incongruent Group E	A	7	133.71	127.28	-6.43	9	117.44	117.22	-0.22	-2.94
	B	6	113.50	112.67	-0.83	3	117.00	131.33	+14.33	+4.22
	Total	13	124.38	120.54	-3.84	12	117.33	120.75	-3.42	-3.64

Table 47

Analysis of Variance Groups A and E
by Sex and Test Form
(Experimental Treatments Reversed)

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F
Group	1	0	0	- -
Test	1	140	140	- -
Sex	1	467	467	- -
Group X Test	1	7	7	- -
Group X Sex	1	500	500	- -
Test X Sex	1	2,883	2,883	3.77
Group X Test X Sex	1	80	80	- -
Within Subgroup	42	32,088	764	- -
Total	49	36,165		

significant.

Tables 48 and 49 are comparable to Tables 34 and 35 in the earlier analysis. In this comparison, non-pretested girls obtained a mean post-test score 11.23 points higher than those who were pretested. This is in contrast to the 6.91 points advantage for the non-pretested girls who saw Film 1. This evidence combined with the information in Tables 40 and 41 indicates that the apparently greater effects of Film 2 were consistently found, and it is reasonable to conclude that Film 2 was generally more effective with both congruent groups than Film 1. In this instance, again, non-pretested groups, even the boys who saw Film 1, scored considerably higher on the post-treatment test- - mean scores being 7.57 points higher than those who were pretested. As in the comparable previous

Table 48

Mean Scores Groups A and C by Sex and Test Form
(Experimental Treatments Reversed)

		Boys				Girls				Gain
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	Both Sexes
Congruent Group A	A	3	114.67	114.33	-0.34	3	134.67	144.67	+10.00	+4.83
	B	3	116.67	124.33	+7.66	3	119.57	119.67	0.00	3.83
	Total	6	115.67	119.33	+3.66	6	127.17	132.17	5.00	4.33
Congruent Group C	A	5	*	118.40	*	5	*	166.80	*	*
	B	5	*	135.20	*	5	*	130.00	*	*
	Total	10	*	126.80	*	10	*	148.40	*	*

*No Pretest

Table 49

Analysis of Variance Groups A and C
by Sex and Test Form
(Experimental Treatments Reversed)

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	1,053.169	1,053.169	1.320
Sex	1	2,682.781	2,682.781	3.362
Test	1	657.031	657.031	- -
Group X Sex	1	144.102	144.102	- -
Group X Test	1	11.719	11.719	- -
Sex X Test	1	4,347.782	4,347.782	5.449*
Group X Sex X Test	1	162.168	162.168	- -
Within Subgroup	24	19,147.467	797.811	
Total	31	28,206.219		

* Significant at 5 % level.

analysis, the differences were not statistically significant.

Tables 50 and 51 compare the effects of the films on incongruent groups that were and were not pretested. While there are no significant differences between the two groups, the mean post-test scores for the boys in both groups were approximately 6 to 7 points higher. Pre-test scores also varied from approximately 3 to 9 points higher for the pre-tested group, but the purpose of the analysis was to compare post-test scores and the post-test differences were significant between sexes at the 5 % level. The scores, however, were generally at the same level and the differences of the same magnitude as other incongruent experimental groups.

Table 50

Mean Scores Groups E and G by Sex and Test Form
(Experimental Treatments Reversed)

		Girls				Boys				Gain Both Sexes
Group	Test Form	N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Incongruent Group E	A	49	147.63	149.39	1.76	49	150.47	154.94	4.47	3.13
	B	49	145.67	147.27	1.60	49	154.14	155.82	1.68	1.64
	Total	98	146.65	148.33	1.68	98	152.31	155.38	3.07	2.38
Incongruent Group G	A	49	*	149.02	*	49	*	150.06	*	*
	B	49	*	152.04	*	49	*	160.49	*	*
	Total	98	*	150.53	*	98	*	155.28	*	*
	Total All Groups	196		149.43		196		155.326		

* No Pretest

Table 51

Analysis of Variance Groups E and G
by Sex and Test Form
(Experimental Treatments Reversed)

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	108.255	108.255	- -
Sex	1	3,410.020	3,410.020	5.163*
Test	1	912.255	912.255	1.381
Group X Sex	1	129.255	129.296	- -
Group X Test	1	1,322.449	1,322.449	2.002
Sex X Test	1	662.521	662.521	1.003
Group X Sex X Test	1	120.020	210.020	- -
Within Subgroup	384	253,596.312	660.407	
Total	391	260,261.123		

* Significant at 5 % level.

One final series of analyses was aimed at determining the extent to which the criteria for congruency could be relaxed and still obtain a relationship between motivational pattern and film context. Tables 52 and 53 report a study on Film 1 in which the criterion on D. F. Factor Number 3 (need for security) was reduced from a requirement of 7 or less to 10 or less (higher scores mean less need), and the requirement for high ability and no college plans was waived.

Girls meeting the relaxed criteria were matched on the basis of pretest scores with others not meeting the criteria. Post-test scores were analyzed by high and low ability (I.Q. 101 and over vs. I.Q. 100 and below) and test form. There were no statistically significant differences,

Table 52

Mean Scores Enlarged Congruent and Incongruent Groups,
Film 1, by Ability and Test Form

Group	Test Form	High Ability N	High Ability Pre	High Ability Post	High Ability Mean Gain	Low Ability N	Low Ability Pre	Low Ability Post	Low Ability Mean Gain	Gain Both Levels
Enlarged Congruent Group	A	41	139.51	146.04	6.53	19	139.63	146.05	6.42	6.48
	B	25	143.20	146.68	3.48	12	134.42	139.91	5.49	4.49
	Total	66	140.90	146.29	5.39	31	137.61	143.68	6.07	5.73
Enlarged Incongruent Group	A	41	139.49	138.63	-.86	19	139.58	138.89	-.69	-.78
	B	25	143.20	144.52	1.32	12	134.58	135.00	.42	.87
	Total	66	140.89	140.86	-.03	31	137.65	137.39	-.26	-.15

Table 53

Analysis of Variance
Enlarged Congruent and Incongruent Groups
Film 1, by Ability and Test Form

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	1,576	1,576	2.15
Ability	1	391	391	- -
Test Form	1	15	15	- -
Group X Ability	1	7	7	- -
Group X Test Form	1	210	210	- -
Ability X Test Form	1	685	685	- -
Group X Ability Test Form	1	23	23	- -
Within Subgroups	186	136,275	733	- -
Total	193	139,182		

but congruent groups were consistently and noticeably higher.

When a comparable reduction in criteria for congruency was made for boys, a significant difference was found between high and low ability groups. In this instance the requirements on D. F. Factor Number 9 (dislike for detail) was reduced from a score of 3 or below to 5 or below (higher scores mean less dislike) and D. F. Factor Number 8 (realistic thinking) raised from 13 or above to 15 or above. Boys meeting the relaxed criteria (also no ability or no college plans requirement) were analyzed by the same high and low ability classification and by best form. The results are seen in Tables 54 and 55. High ability groups both congruent and incongruent scored higher than low ability groups.

Table 54

Mean Scores Enlarged Congruent and Incongruent Groups,
Film 2, by Ability and Test Form

Group	Test Form	High Ability				Low Ability				Gain Both Levels
		N	Pre	Post	Mean Gain	N	Pre	Post	Mean Gain	
Enlarged Congruent Group	A	41	150.49	150.46	-.03	21	133.10	132.57	-.53	-.28
	B	34	143.32	145.82	2.50	23	128.09	125.91	-2.18	.16
	Total	75	147.24	148.36	1.12	44	130.48	129.09	-1.39	-.14
Enlarged Incongruent Group	A	41	150.49	151.00	.51	21	133.14	128.43	-4.71	-2.10
	B	34	143.32	144.02	.70	23	128.26	129.39	1.13	.92
	Total	75	147.24	147.84	.60	44	130.59	128.93	-1.66	-.53

Table 55

Analysis of Variance
Enlarged Congruent and Incongruent Groups,
Film 2, by Ability and Test Form

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Group	1	10	10	.02
Ability	1	20,210	20,210	34.02**
Test Form	1	2,084	2,084	3.51
Group X Ability	1	0	0	0
Group X Test Form	1	28	28	.05
Ability X Test Form	1	1	1	.002
Group X Ability X Test Form	1	1	1	.002
Within Subgroups	230	136,622	594	- -
Total	237			

** 6.76 needed for significance at 1 % level.

The mean differences were 19.27 points for congruent groups and 18.91 points for incongruent groups.

This analysis indicates that the criteria for congruency are rather restricted. Presently available measurement instruments do identify characteristics which are useful for attitude modification purposes, but only the extreme ends of the scales appear to be effective in identifying these relevant characteristics. Further, it was necessary in administering the instruments to gather large quantities of data which were irrelevant for intended purposes, i.e., many of the subscales did not differentiate among groups of high and low ability, planning and not planning college.

Section VII

Summary and Conclusions

The primary objective of the experiment was to determine whether or not communications containing an instructional message designed to modify attitudes for a group of students with a specific "motivational pattern" (identified by existing instruments from the behavioral sciences) have significantly greater impact on individuals whose motivational pattern is congruous with the message, than on others who do not possess the motivational pattern provided for in the communication.

In less technical terms, the study sought to determine if it were possible to prepare a message for mass media which would be predictably more effective on those for whom it was intended than on a total audience. If it were possible to design an instructional message in such a manner the knowledge would be of inestimable educational and social value.

Procedure

The instructional objective selected to serve as the experimental vehicle was "attitudes toward education beyond the high school." The target audience consisted of "high ability" high school students who were not planning college. The experimental population totaled 5,097 high school students selected from eight Oregon high schools which were classified as urban, suburban, large rural and small rural.

The study was conducted in two phases. The first phase was a study of the goals and interests (identified as motivational patterns) of 1,052 high school students. Large sex differences were found in the characteristics measured by the evaluative instruments and consequently one experimental film was prepared for individuals of each sex (who

3

possessed demonstrated quantities of the specific characteristics measured by the evaluative instruments).

Two forms of a criterion instrument designed to identify attitudes toward further education were developed during the first phase of the study. A total of 206 high school students participated in the item analysis and 141 of these students were involved in a validation study of actual college matriculation.

The second phase of the study involved 3,839 Oregon high school students. Of this number, 3,431 students were assigned to the various experimental treatments. An eight-group experimental design, an extension to that proposed by Soloman (40), was developed to assess the differential effects of a given treatment on subjects with varying characteristics. Resulting data were analyzed by analysis of variance--multiple classification, with variance due to group, sex, test form and the interactions of the factors being analyzed separately.

Conclusions

1. The evidence indicates that among subjects involved in the study there is a significant relationship between identifiable learner characteristics and the content of a message. Mean gains in post-treatment scores were found to be between four and seven times greater for individuals possessing specified characteristics than for comparable individuals who did not possess those characteristics.
2. The instruments employed in the study to identify motivational patterns were effective in identifying certain learner characteristics relevant to communication processes, but only when extreme ends of available scales were employed did significant relationships occur. Further, large quantities of data were involved which were irrelevant

to communication purposes. There is a need and use for objective instruments to identify learner characteristics which are related to instructional objectives in the affective domain.

3. Many individuals in the study whose post-treatment scores changed appreciably were not identified by the instruments employed to assess motivational patterns. This finding further suggests the need for more refined techniques (a) to objectively measure learner characteristics relevant to attitude change and (b) to more accurately estimate the number of specific messages required to influence given proportions of a target audience.
4. Pretesting learners in the experimental population significantly and consistently depressed post-treatment scores. This finding was in direct contrast to pretesting in the cognitive domain which often enhances post-treatment scores.
5. The further extension to control group design which provides for analyses of learner characteristics relevant to specific treatments (specific "within group" variance) is a useful procedure. An improvement over the design as employed in the study would be to reduce the N of control groups to 50 percent of that in experimental groups when sex is one of the criteria for relevancy of learner characteristics to instructional treatment.
6. The experimental films employed in the study had relatively small effects on large numbers in the experimental population. Individual scores on attitude instruments varied considerably even without experiencing an experimental treatment. Many who viewed the films were not affected in the intended direction. It is considered likely that persuasive messages prepared without a knowledge of relevant learner

characteristics, may be relatively ineffective.

7. One exposure to a single motion picture appeared to produce significant changes in attitude in some individuals. A current notion of attitude change via mass media postulates that "while single programs--a film perhaps--show slight effects, several related programs produce effects apparently even greater than could be accounted for in terms of simple summation" (3). The observations made in this study suggest that attitude change may occur in another manner. Attitude change through communication may result when the recipient of the communication perceives an attitudinal object as being relevant to a perceived goal. When this event occurs, the attitude toward the object (physical or psychological) changes. The event may occur in a single association and may not require prolonged and repeated exposure. Evidence indicates that several messages produce greater attitudinal change than a single message; however such change actually may not be accumulative within a given individual. Attitude change may result from that particular message which produces relevant associations for specific individuals. Additional messages are superfluous for those individuals. Additional messages may result in the necessary perceptions being made by other individuals, thus producing the illusion of accumulating effects. Actually, additional messages have little effect either on those who already perceive the object as ego-relevant or on those whose motivations are not congruent with a message.

8. Procedures other than those employed in the study are recommended to further refine a mass media message intended to modify a specific attitude. Procedures employed in this study essentially involved

(a) the objective evaluation of learner characteristics of a target audience (in one terminology the identification of those symbolic stimuli which serve as effective reinforcers for selected individuals), (b) the preparation of specifications for an instructional message which utilized the information obtained, (c) the preparation of a script fulfilling the specifications, (d) the interpretation of the script by media experts to create the product which eventually is experienced by the observer. The procedures are satisfactory as far as they go but an additional step is considered essential. Each element in the created product should be empirically tested with learners who possess the prescribed characteristics to ascertain whether or not the desired associations are made. If the product elicits behavior which indicates that the required perception has not taken place, the product should be modified (as in instructional programing) until satisfactory evidence is obtained.

9. The evidence leads to the conclusion that each experience, the pretest alone, the pretest and the film together, and the film alone, affects post treatment test scores. The pretest alone depresses post-test scores, the pretest and the film together slightly enhance post-test scores, and the film alone significantly enhances post-test scores. Post treatment test scores are significantly higher for groups composed of individuals whose motivational patterns are congruent with the content of the film than they are for groups composed of individuals whose motivational patterns are incongruent with the content of the film when the groups have comparable pretest scores.

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Appendix A

Copy of Exact Instructions Given Each Class

Your Educational Plans

Today you are being asked to answer some questions about yourself. This is part of a large research project which is being sponsored by the U. S. Office of Education in Washington, D. C. as part of the National Defense Education Act. The purpose of the research is to investigate ways to make American education continually more effective.

I shall now give each of you a set of questions. In a moment I shall give you an answer sheet. Please do not answer until I give you further directions. (Distribute tests and answer sheets)

Is there anyone who does not have a pencil or ball point pen? (Must have either.) (Distribute pencils).

Directions are as follows:

1. "This is not a test. It is simply a questionnaire about your plans."
2. "There are no right or wrong answers."
3. "Where you are not sure of how to answer a question, answer it the way you think best."
4. "Answer every question. Don't skip any."
5. "If you feel you really should ask a question about any part of this questionnaire, then please raise your hand so that I can come to help you without disturbing the group."
6. "Mark your answers to all questions on the separate answer sheet. Be sure to print your name on the answer sheet in large block letters."
7. "Begin by reading the directions on the cover of your booklet."
8. "When you have completed the questionnaire, please raise your hand and I will collect it from you."

9. "The Date is to be marked -- (today's date)."

D F Opinion Questionnaire Instructions

1. "Is there anyone here who was not here on__________and who did not answer the questionnaire about YOUR EDUCATIONAL PLANS? If so -- plan to study during this period because both questionnaires are needed for this research.
2. Answer Sheets -- Print in block letters your name, school and date.
3. (Pass out booklets) "Please do not begin until all booklets are out. We will go through the directions together."
4. "Be sure to check the item number in the booklet against the number on the Answer sheet."
5. "When you finish, raise your hand and I will collect the paper."

College Questionnaire Instructions

1. "Today you are being asked to mark a questionnaire on how you feel about more education after you leave high school."
2. (Post-test only: Some of you have marked a questionnaire which looks like this one, but actually none of you have ever seen this form before.)
3. "Each of you will now receive a copy of a questionnaire and a special kind of pencil. Please do not make any marks on the paper until I give you further directions."
4. "Distribute questionnaires and pencils."
5. "Please note that in the left margin (turn questionnaire sideways) there is a place for your name. Will you please print your last name in the space provided, then print your first name, and then print your middle initial. Leave blank the space where it says

score. Then enter your age, and the letter M for male if you are a boy and F for female if you are a girl.

6. "Will you also please note that at the top of the questionnaire it says: (read definition of "college" and directions through the explanation of strongly disagree.")
7. "When you finish raise your hand and I will come to you and collect your paper."
8. "If you have any questions about the questionnaire, please raise your hand and I will help you."
9. "Mark carefully between the dotted lines under the letter which best expresses the way you feel."
10. "Are there any questions? All right, begin."

Appendix B

First year study of 1,052 seniors from five high schools classified as urban, suburban, large rural and small rural. All differences reported are significant at the 1 % level of confidence.

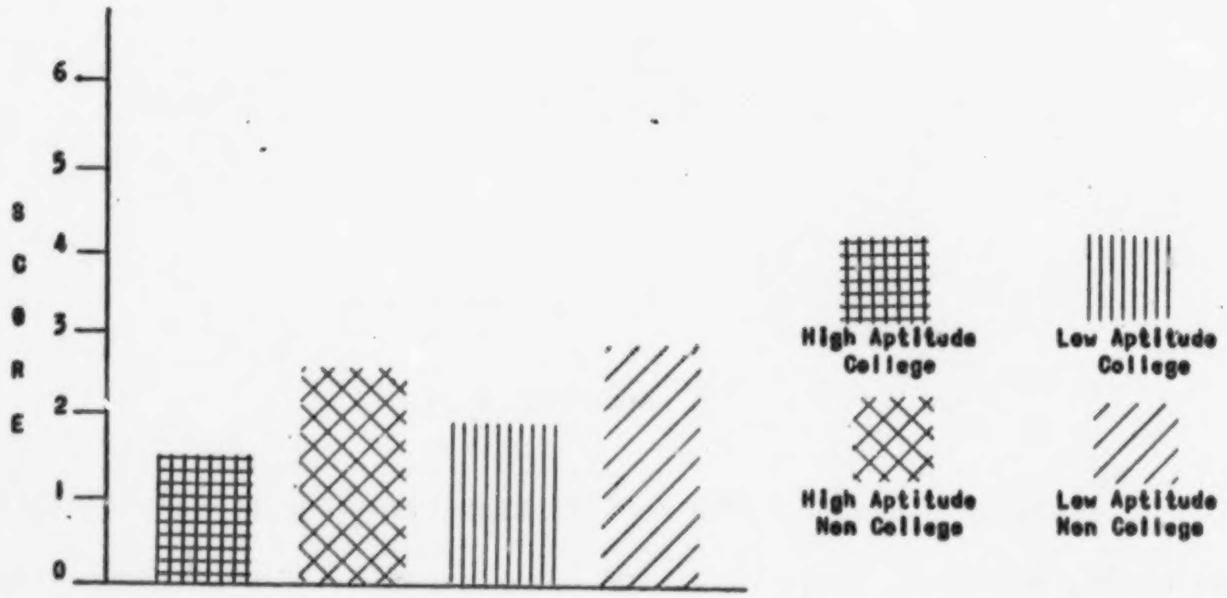
The F - value of the difference between or among scores is reported together with the F - value required for significance at the 1 % level of confidence. The latter figure is in parantheses.

The following graphs illustrate differences in responses found on selected items in the two instruments employed in the study to assess motivations when high school students are classified in various ways.

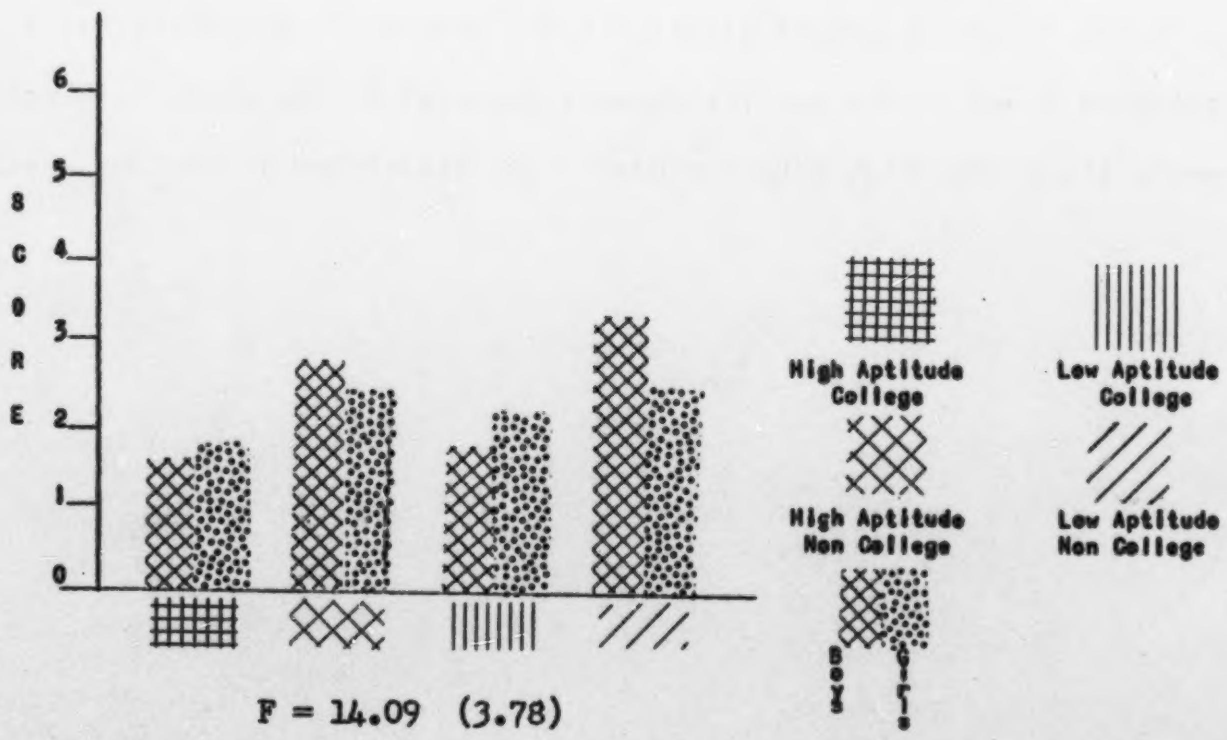
Y.E.P.

Item 1

(Aspirations)



F = 89.43 (3.78)

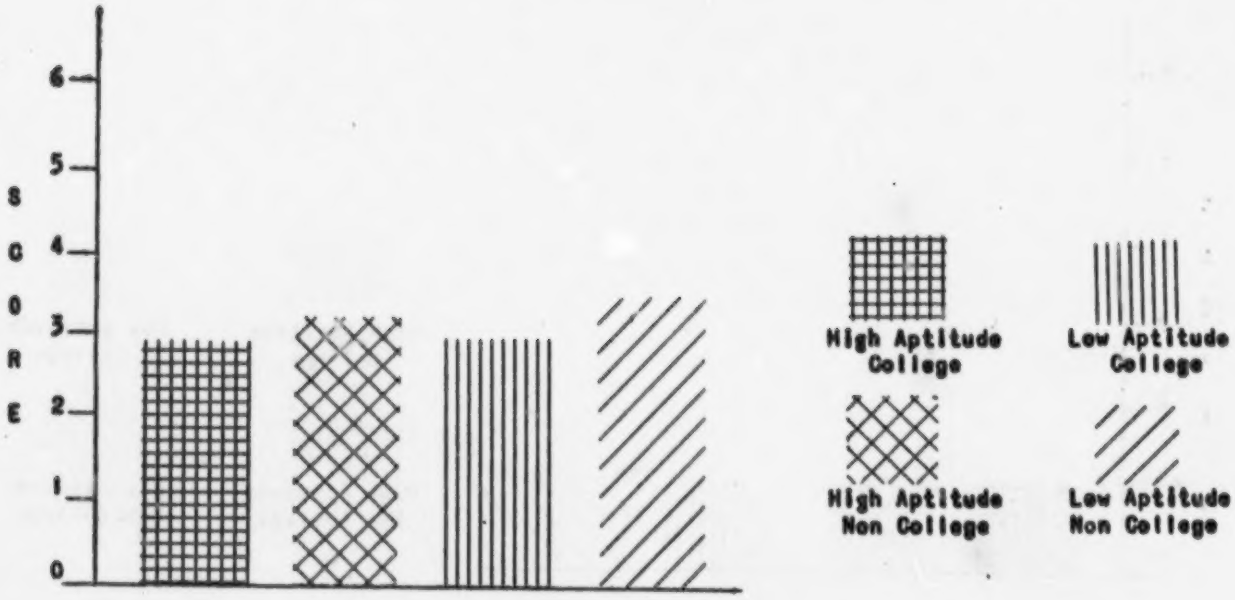


F = 14.09 (3.78)

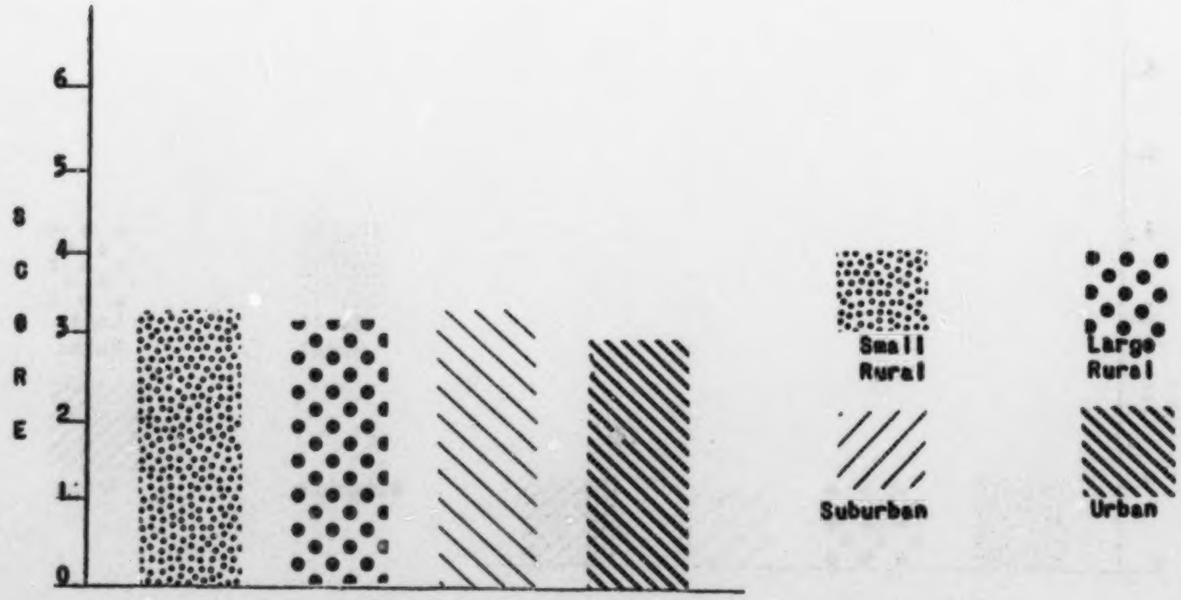
Y.E.P.

Item 2

(Occupation Level of Parents)



F = 18.84 (3.78)

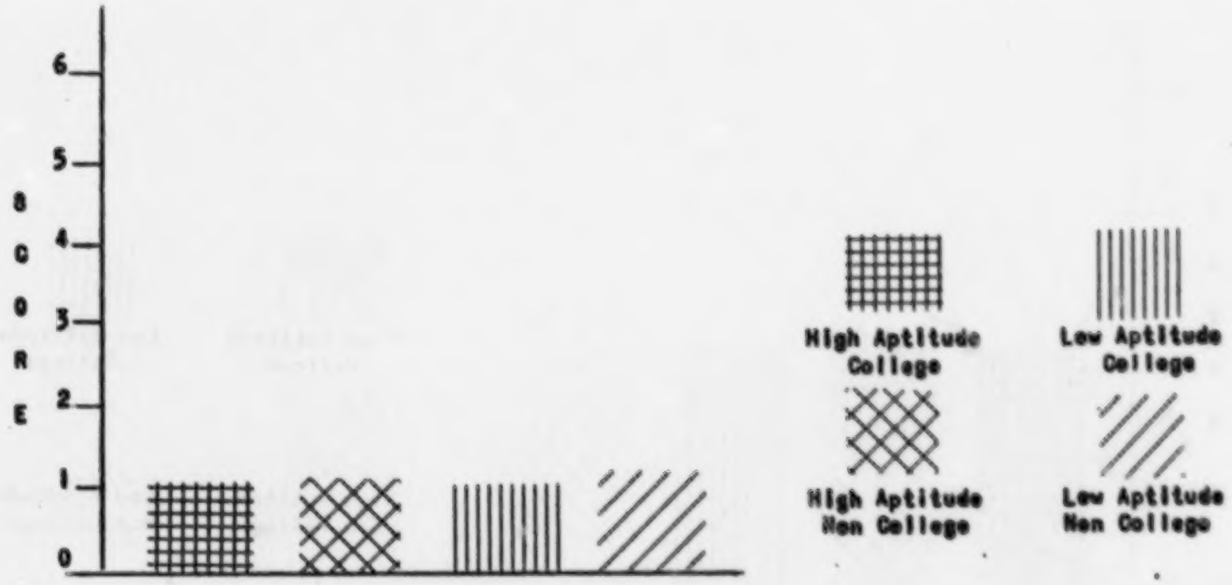


F = 8.11 (3.78)

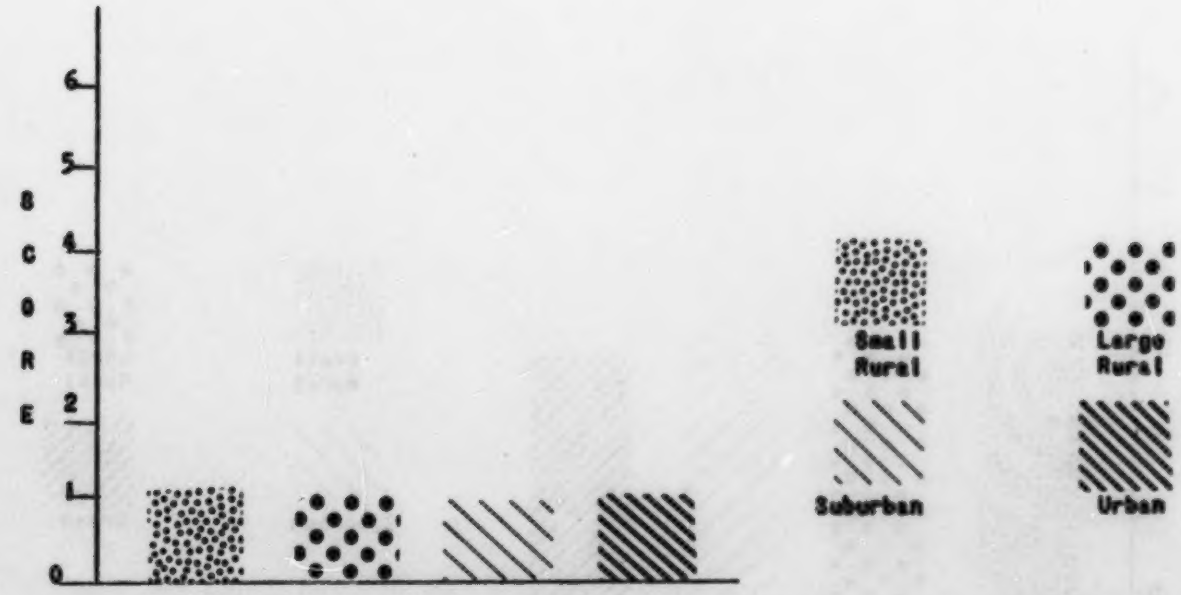
Y.E.P.

Item 5

(Planning to Finish High School)



F = 6.82 (3.78)

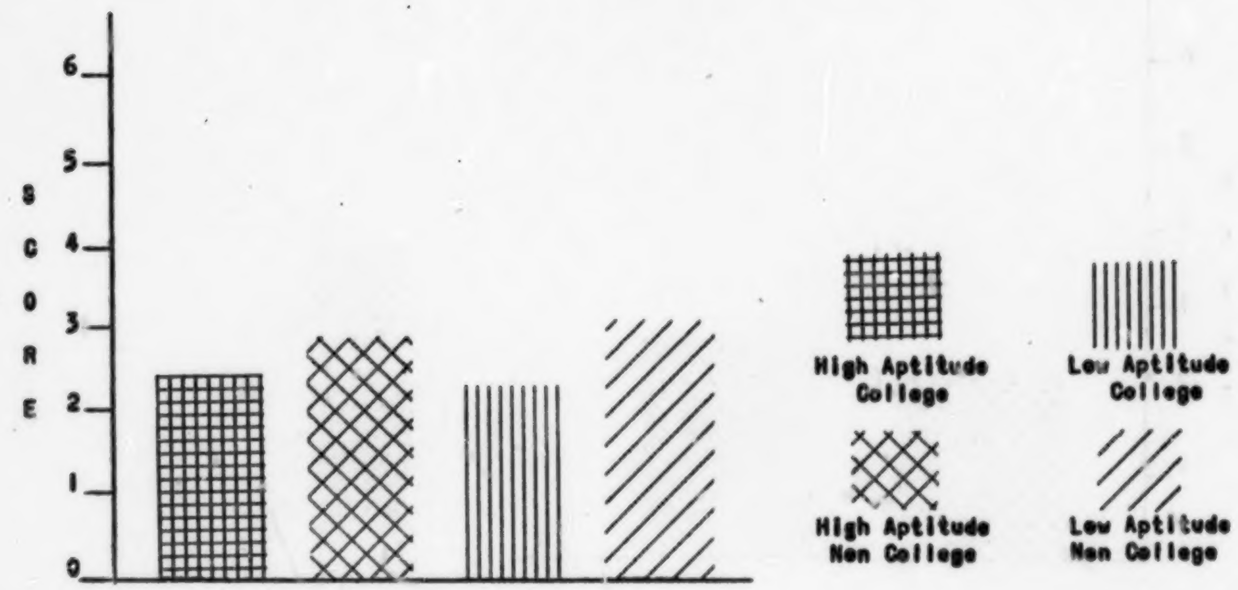


F = 66.64 (3.78)

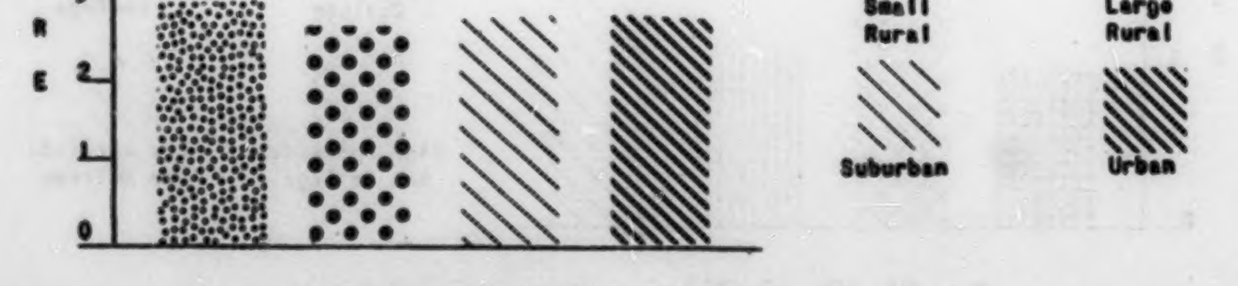
Y.E.P.

Item 11

(FINANCIAL NEED)



F = 33.64 (3.78)

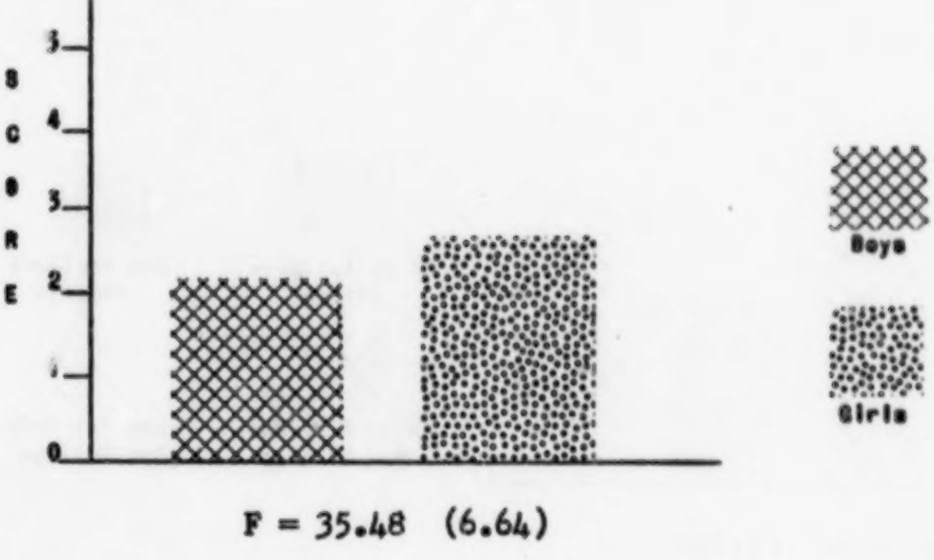


F = 4.54 (3.78)

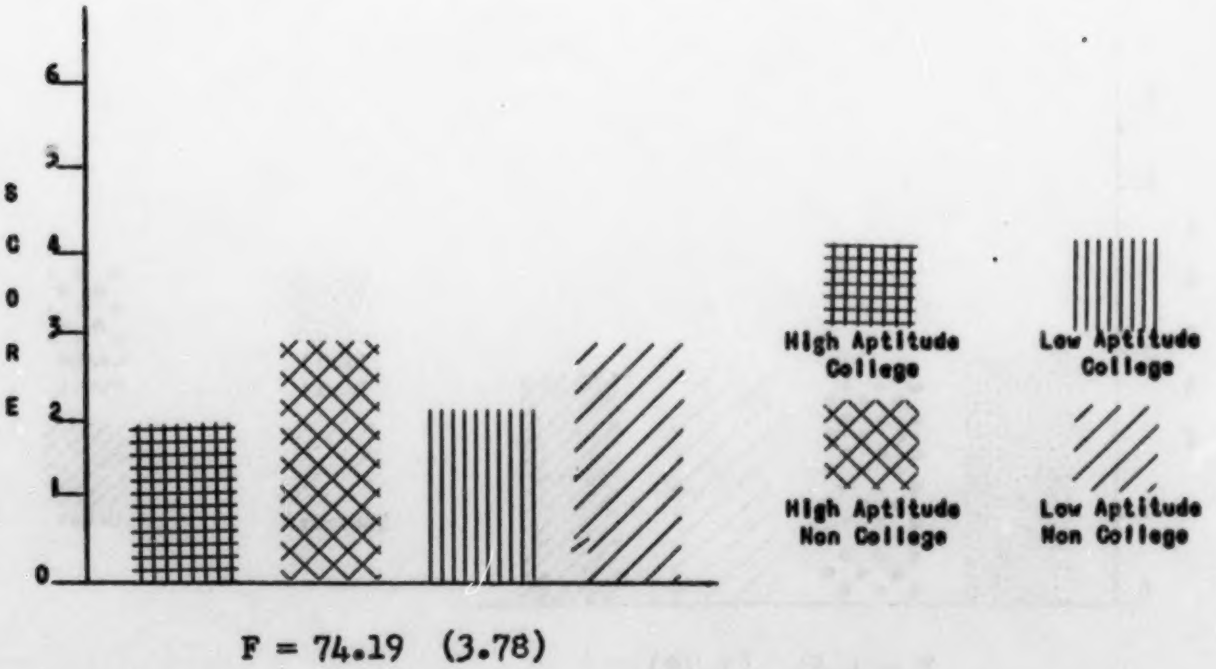
Y.E.P.

Item 12

(Father's Sentiments)



F = 35.48 (6.64)

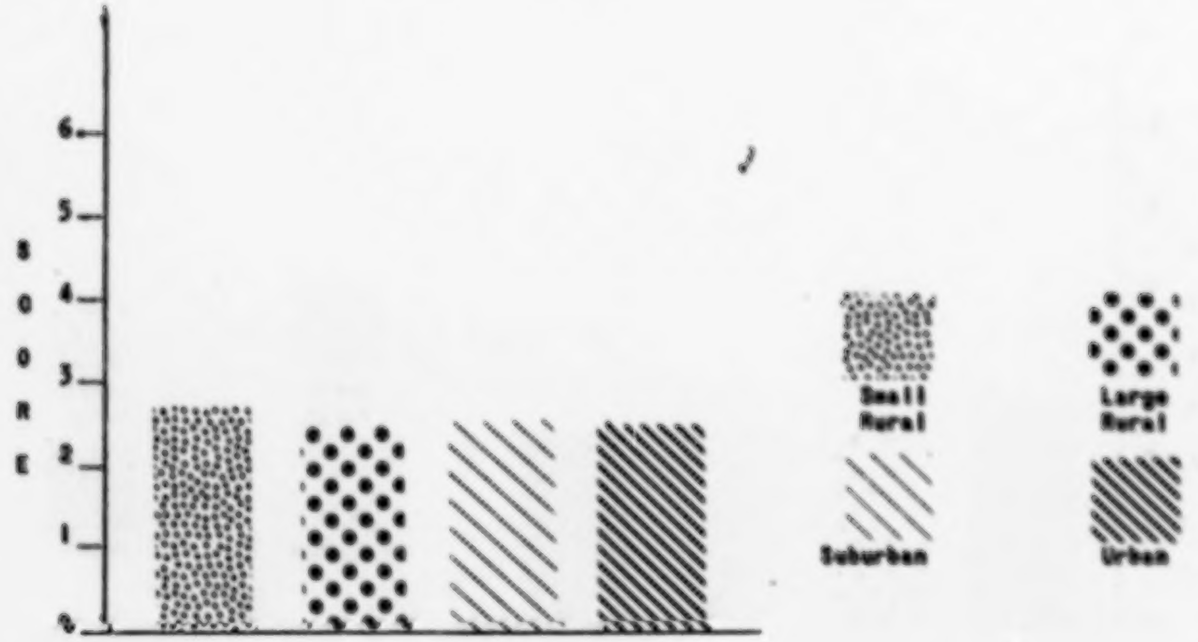


F = 74.19 (3.78)

Y.E.P.

Item 13

(Mother's Sentiments)



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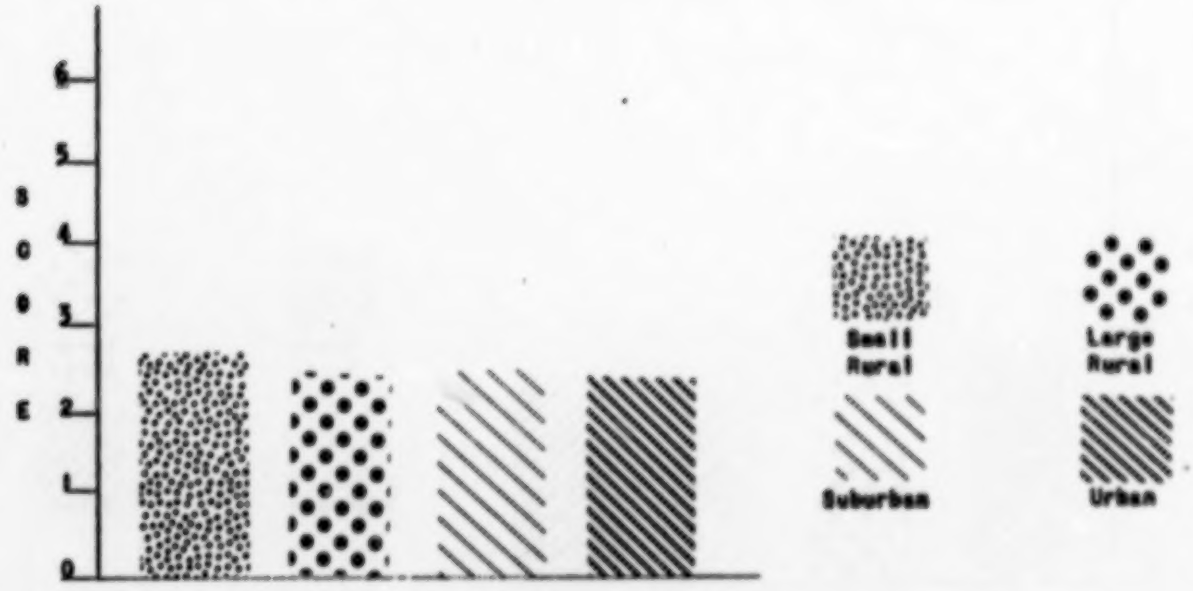
Y.E.P.

Item 12

(Father's Sentiments)

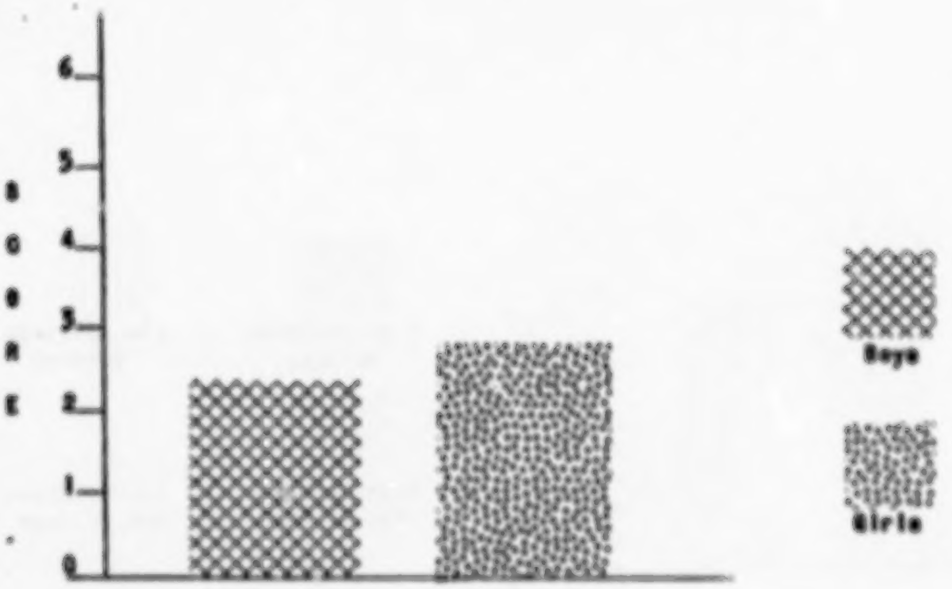


F = 4.65 (3.78)

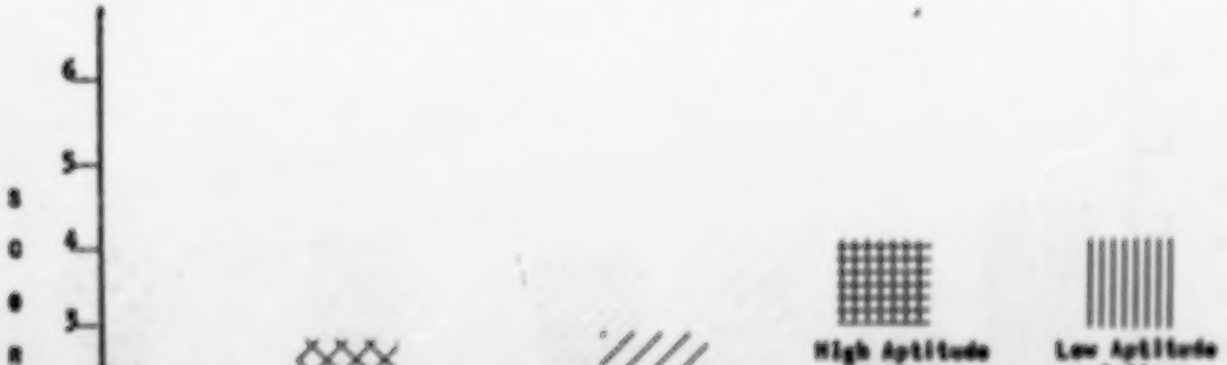
Y.E.P.

Item 13

(Mother's Sentiments)



F = 64.78 (6.64)

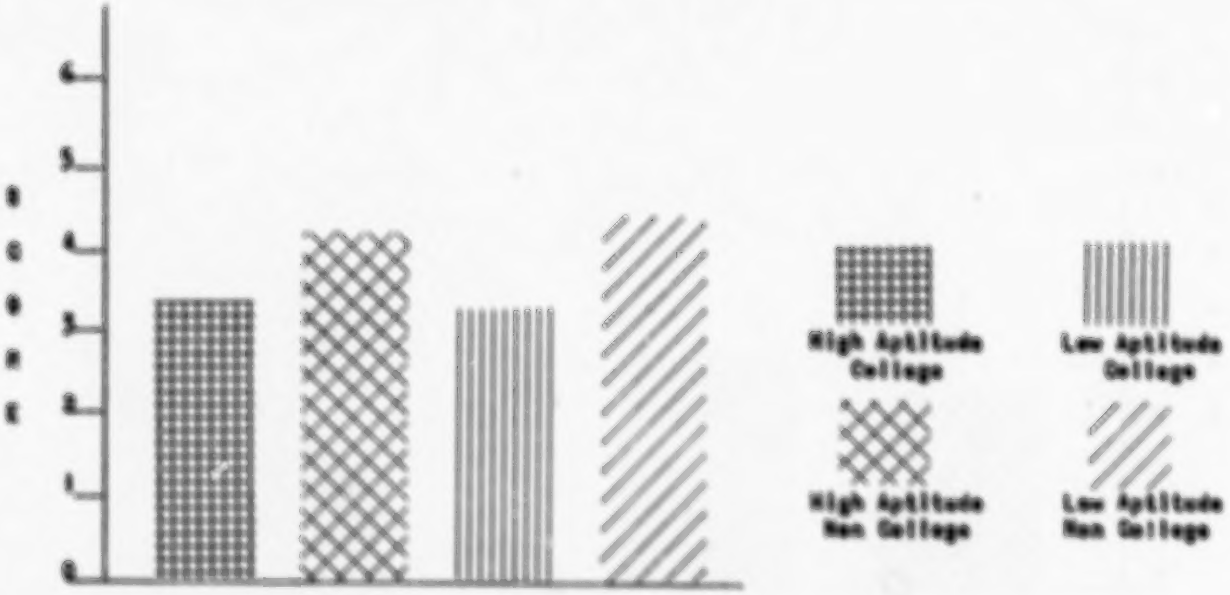


F = 135.68 (3.78)

Y.E.P.

Item 14

(Father's Educational Level)



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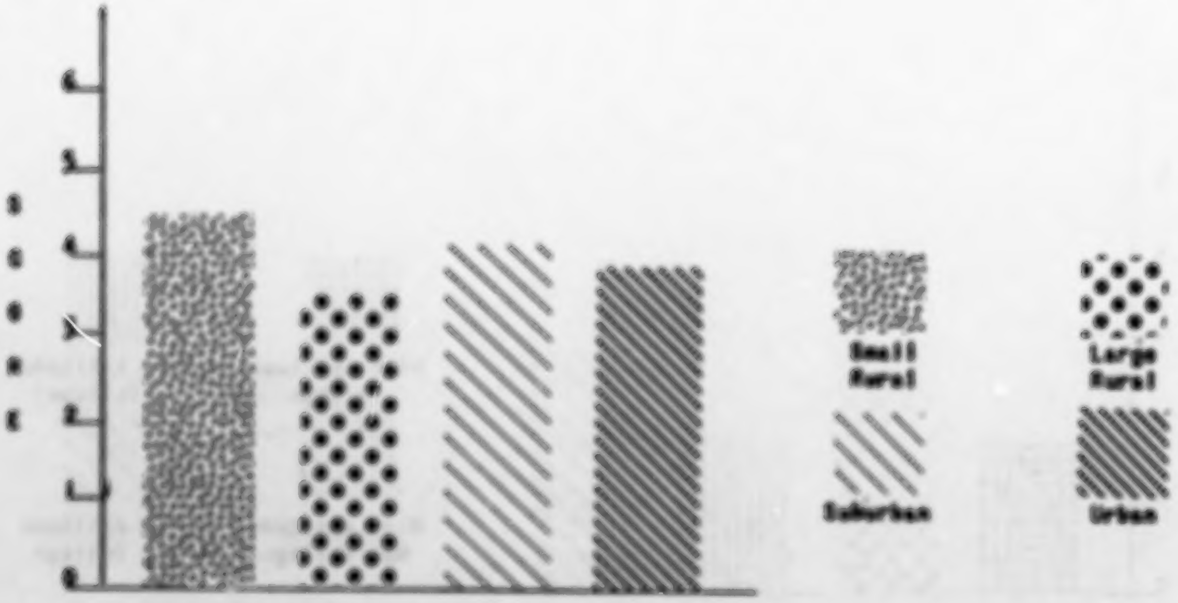

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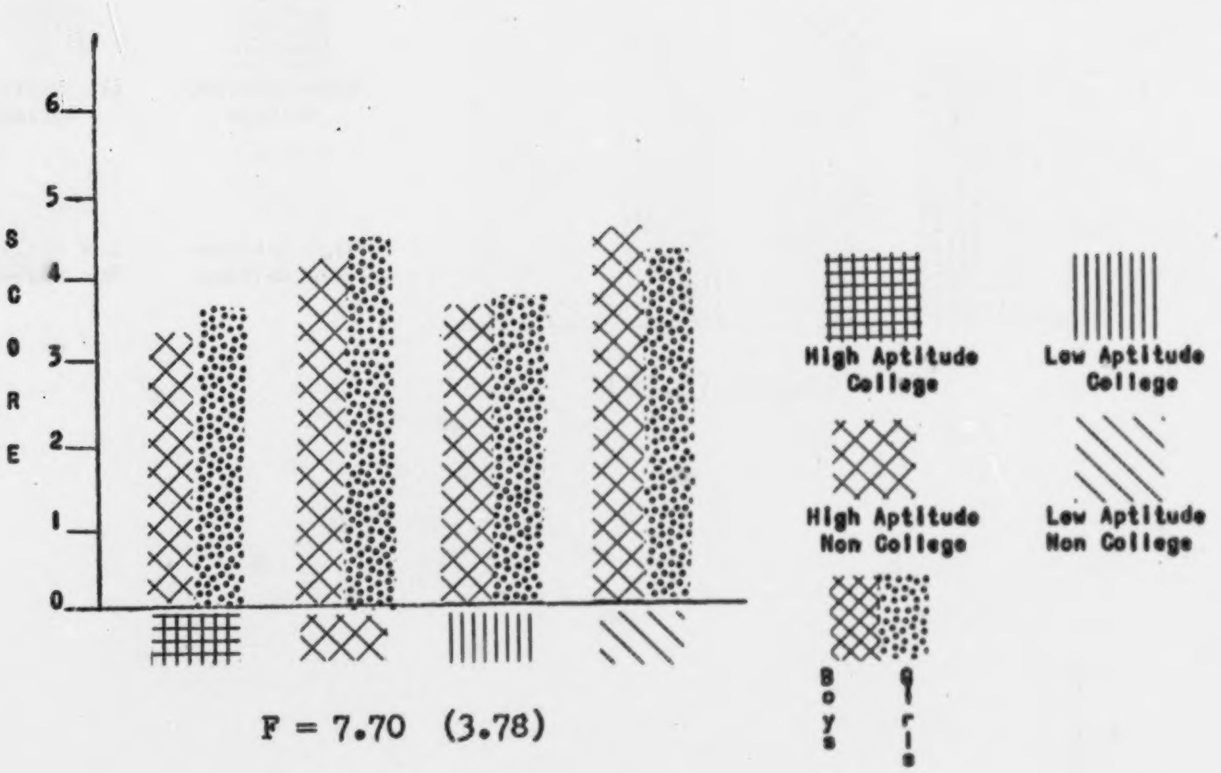
Y.E.P.

Item 14

(Father's Educational Level)

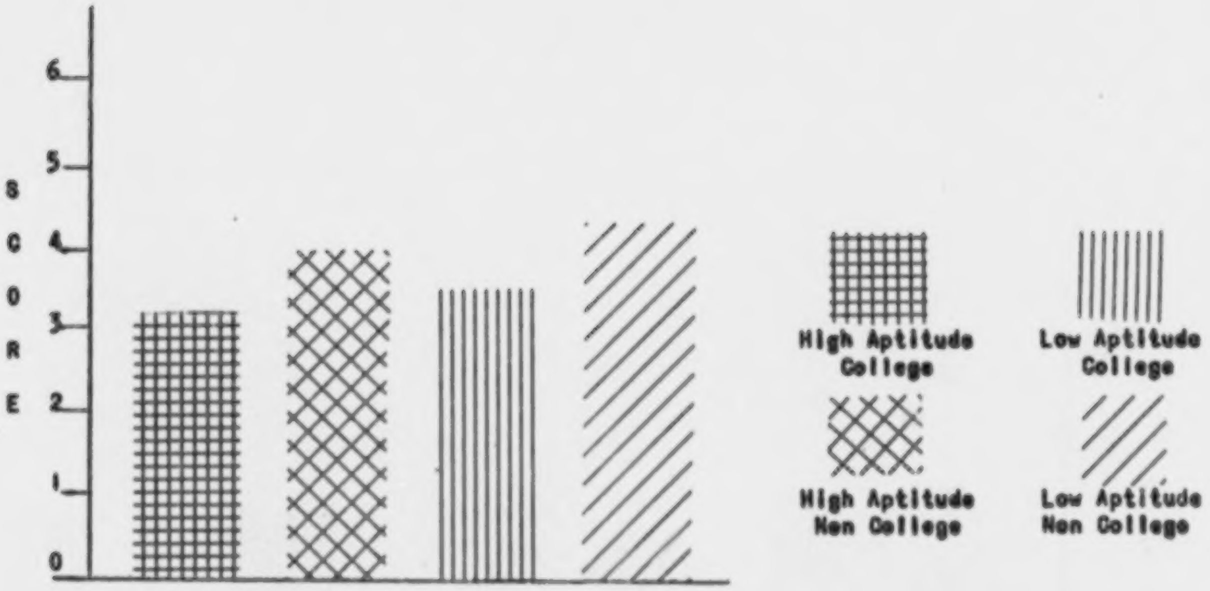


F = 7.70 (3.78)

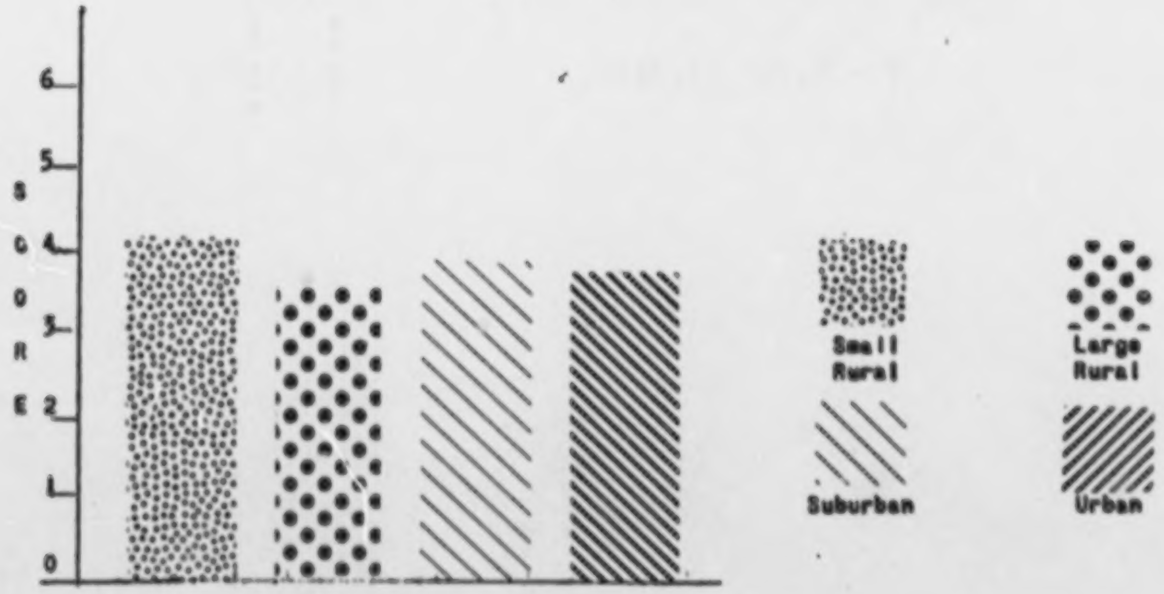
Y.E.P.

Item 15

(Mother's Educational Level)



F = 39.69 (3.78)

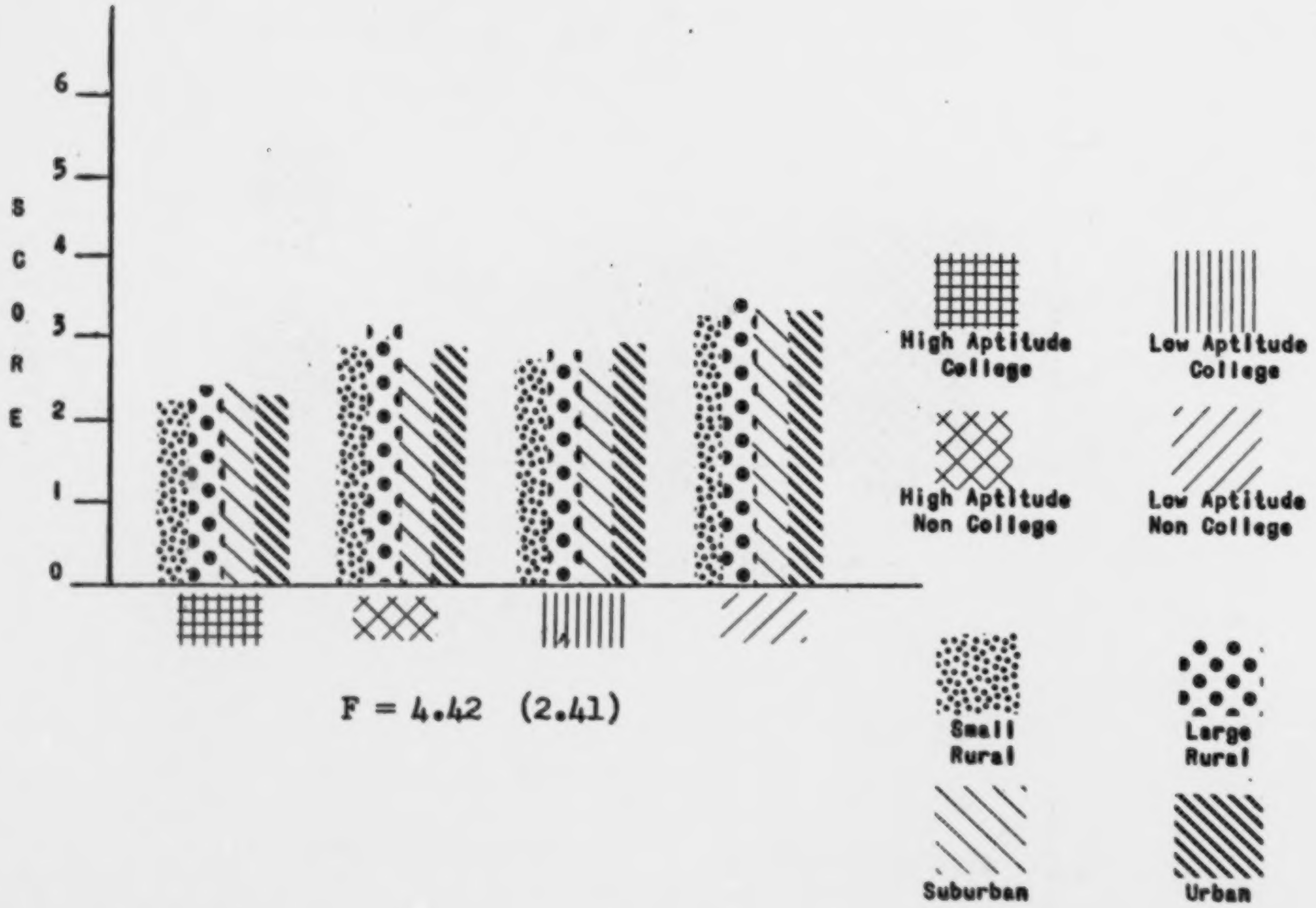


F = 12.02 (3.78)

Y.E.P.

Item 22

(High School Grades)



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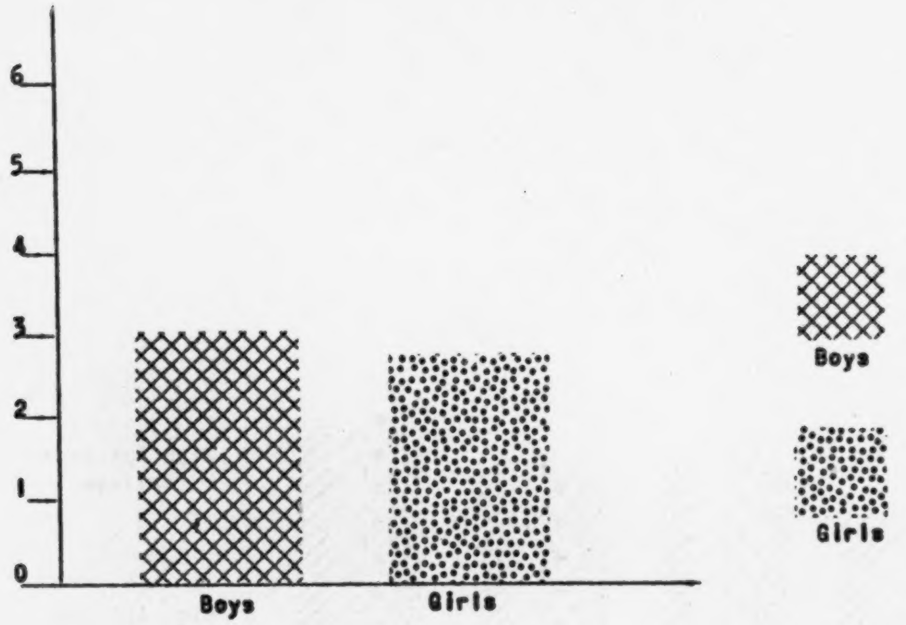
Y.E.P.

Item 22

(High School Grades)



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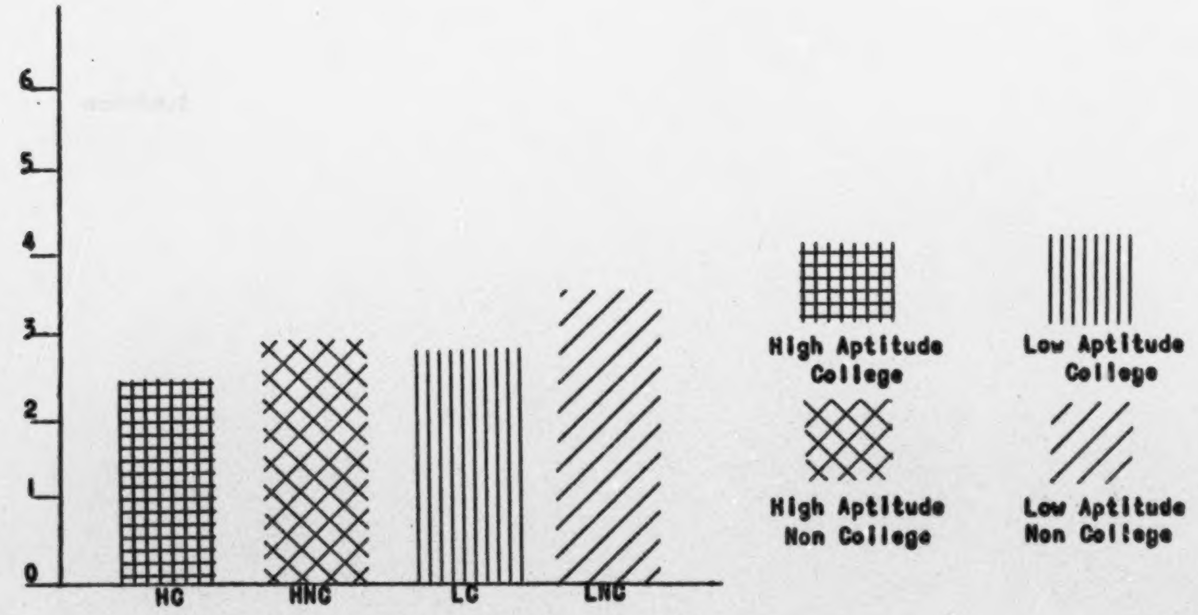

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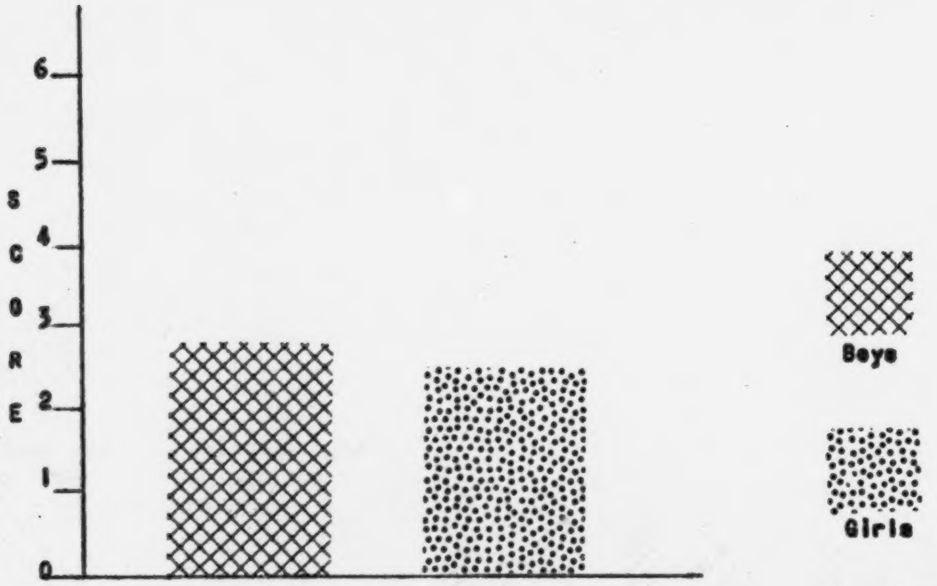
Y.E.P.

Item 23

(Junior High School Grades)



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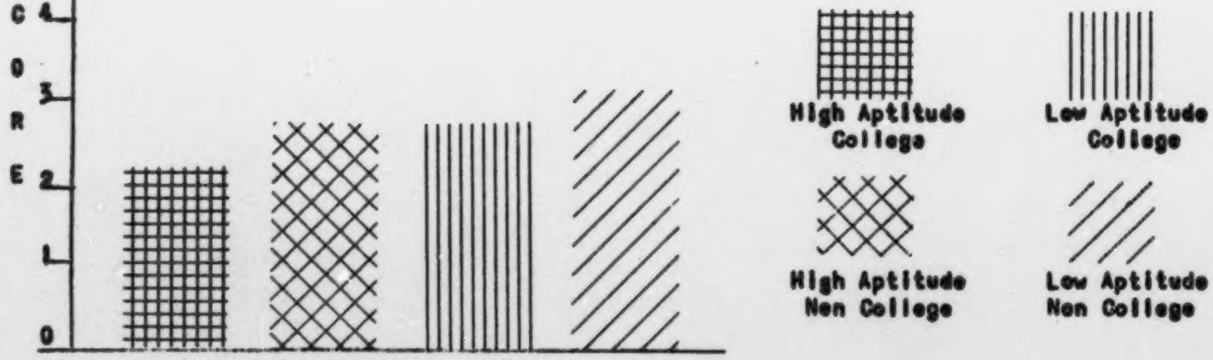

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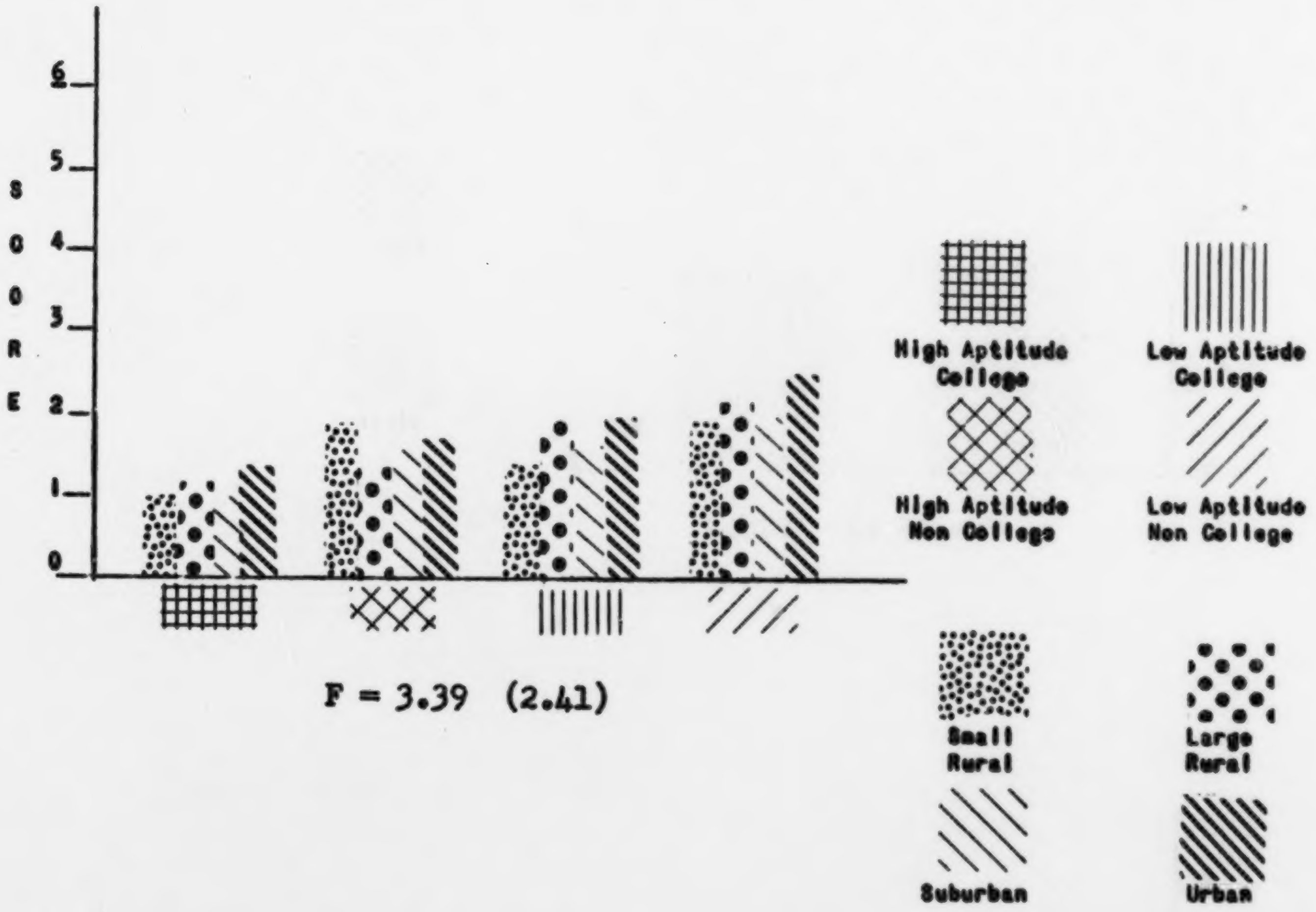
Y.E.P.

Item 23

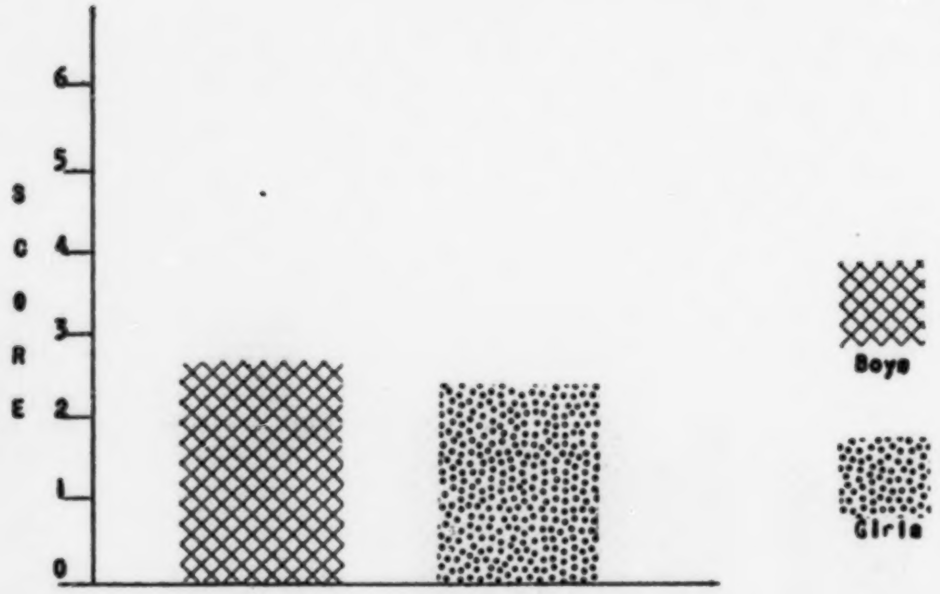


F = 3.39 (2.41)

Y.E.P.

Item 24

(Primary School Grades)



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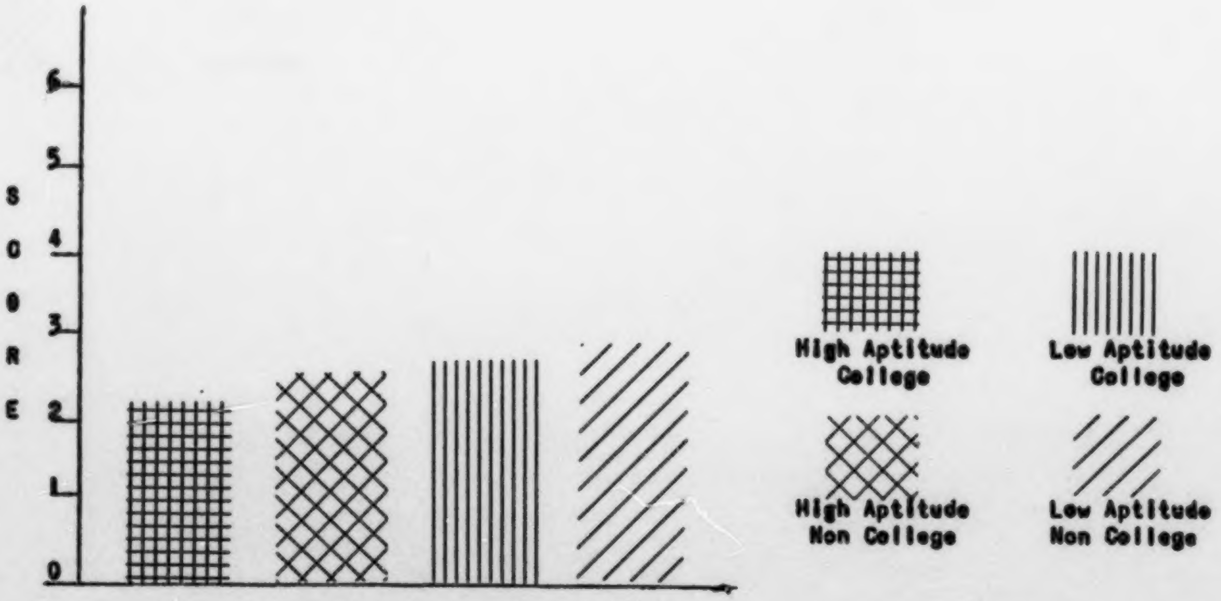
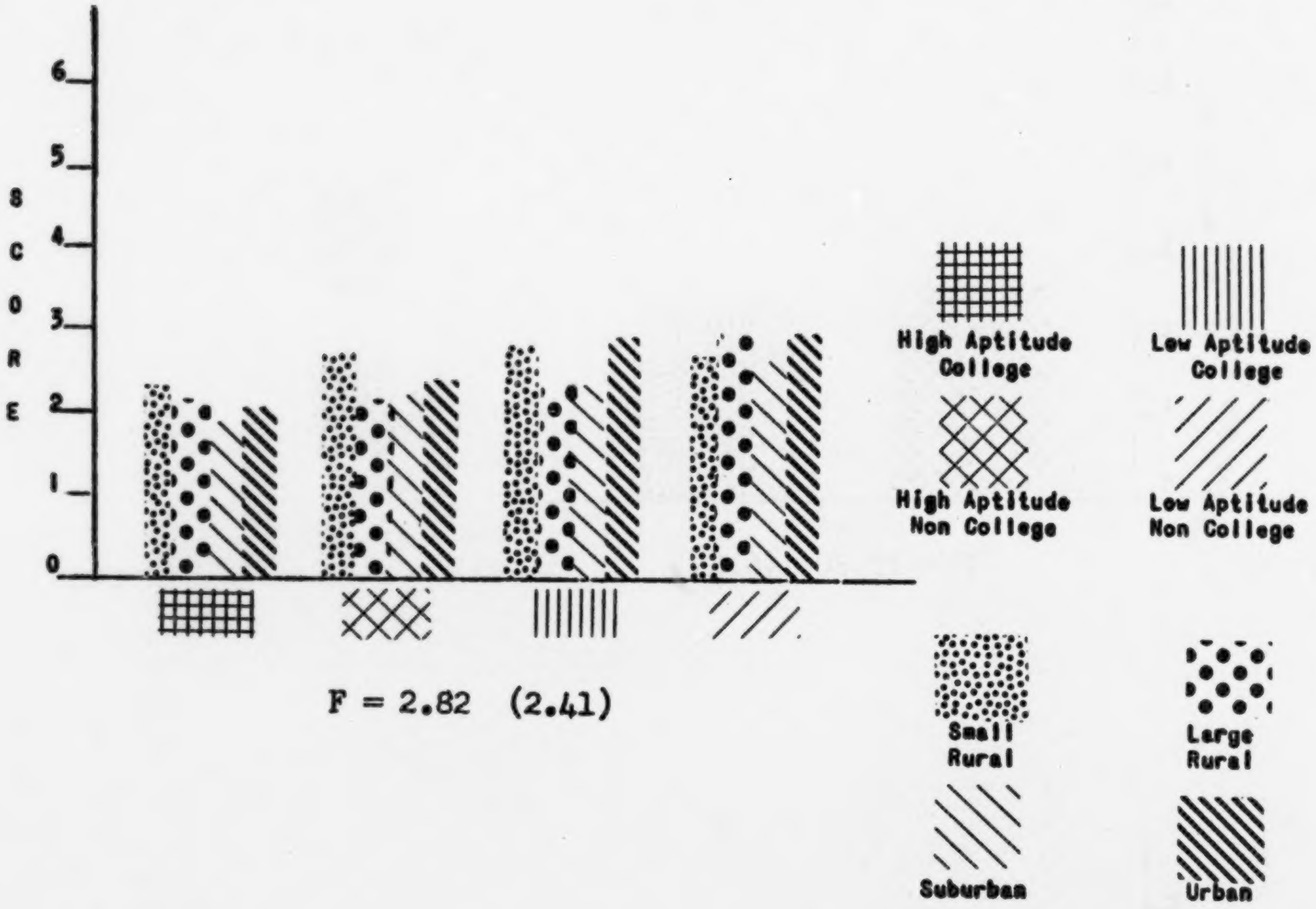


F = 23.73 (3.78)

Y.E.P.

Item 24

(Primary School Grades)

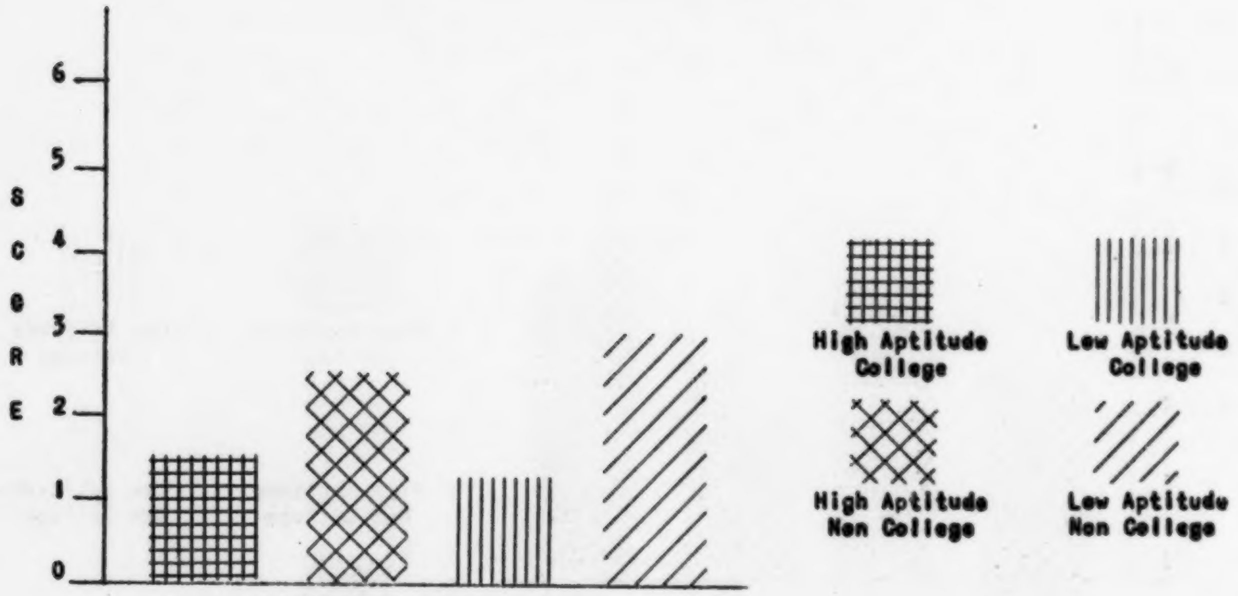


F = 2.82 (2.41)

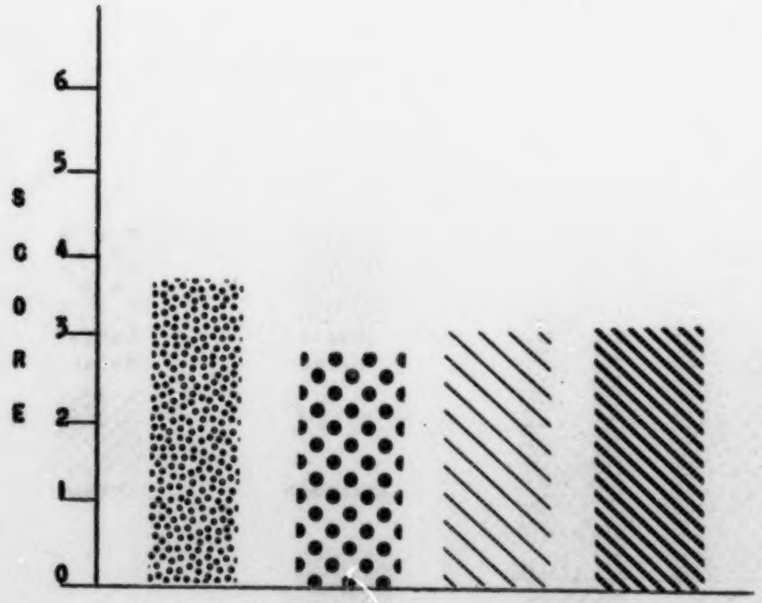
Y.E.P.

Item 29

(Best Friend's College Intentions)



F = 98.93 (3.78)

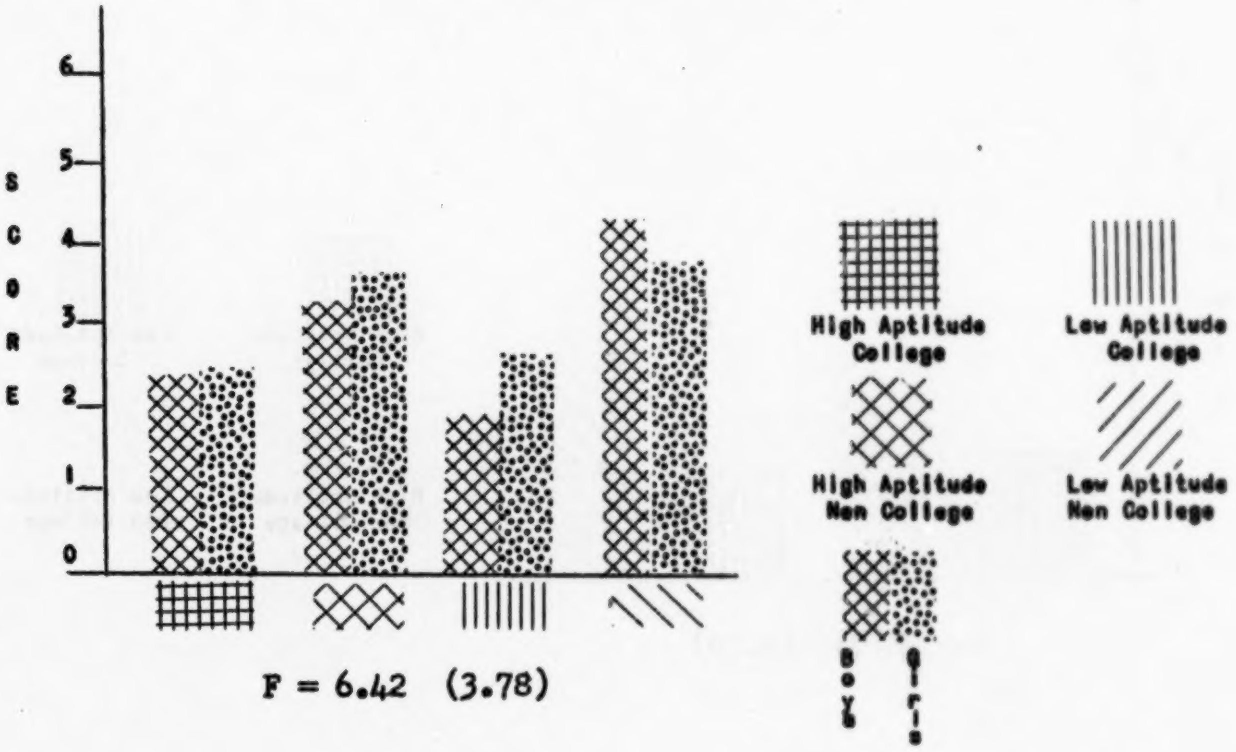


F = 17.47 (3.78)

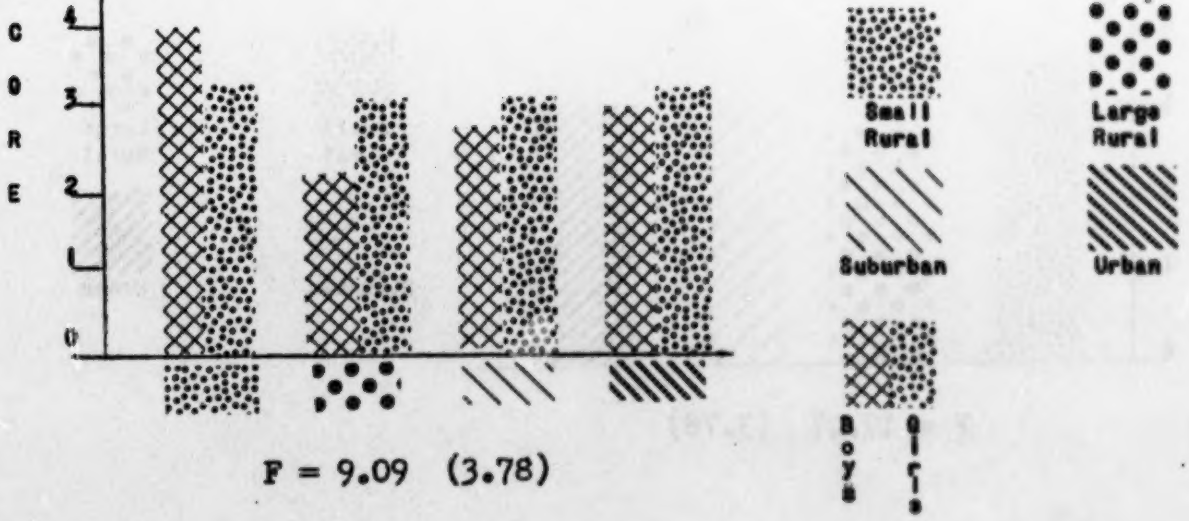
Y.E.P.

Item 29

(Best Friend's College Intentions)



F = 6.42 (3.78)

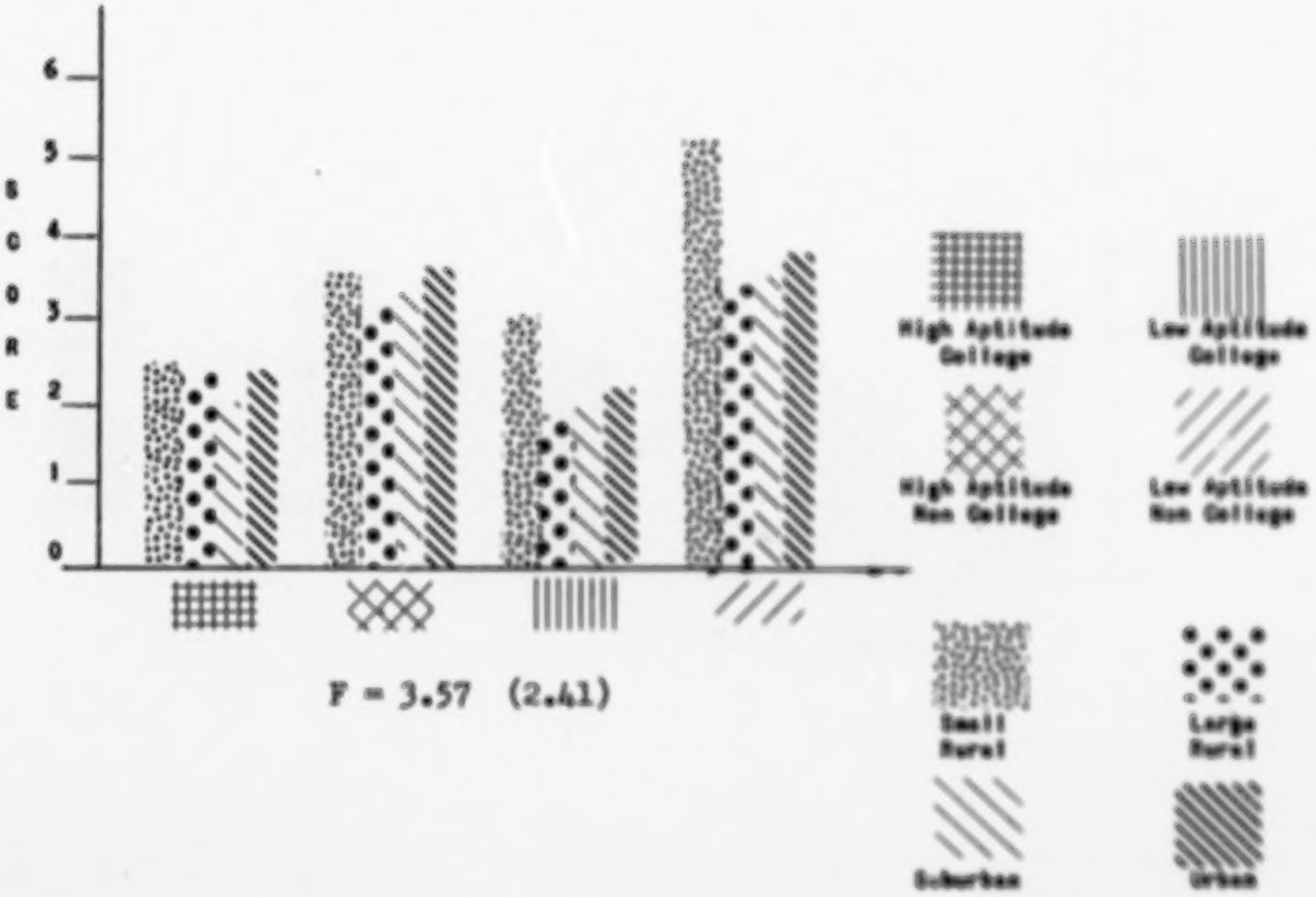


F = 9.09 (3.78)

Y.E.P.

Item 29

(Best Friend's College Intentions)

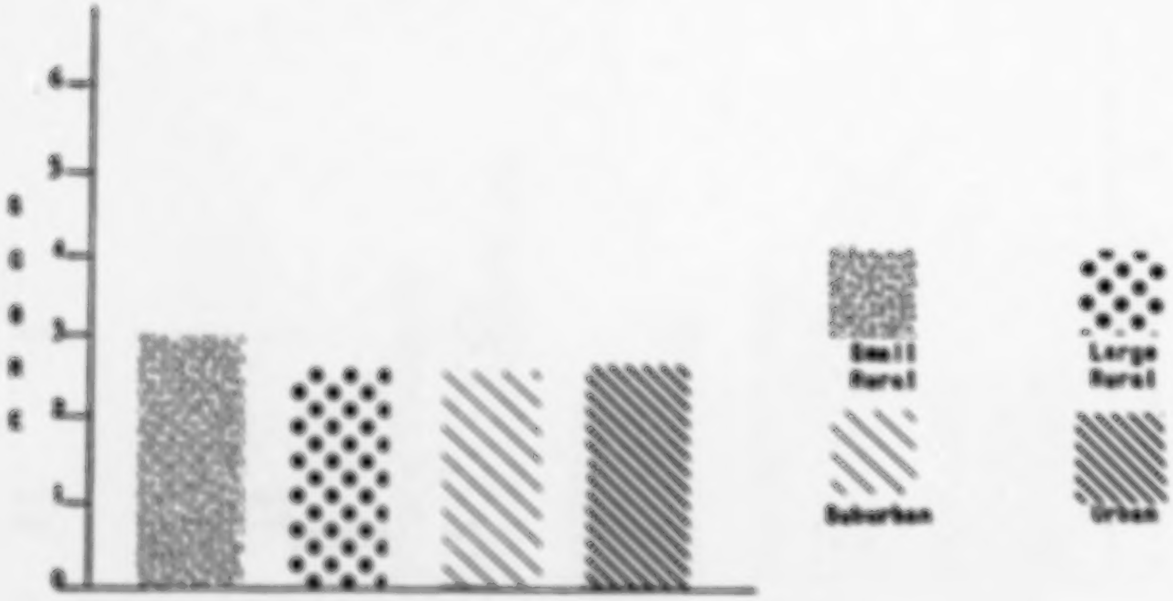


F = 3.57 (2.41)

Y.E.P.

Item 30

(Best Friend's Sentiments)

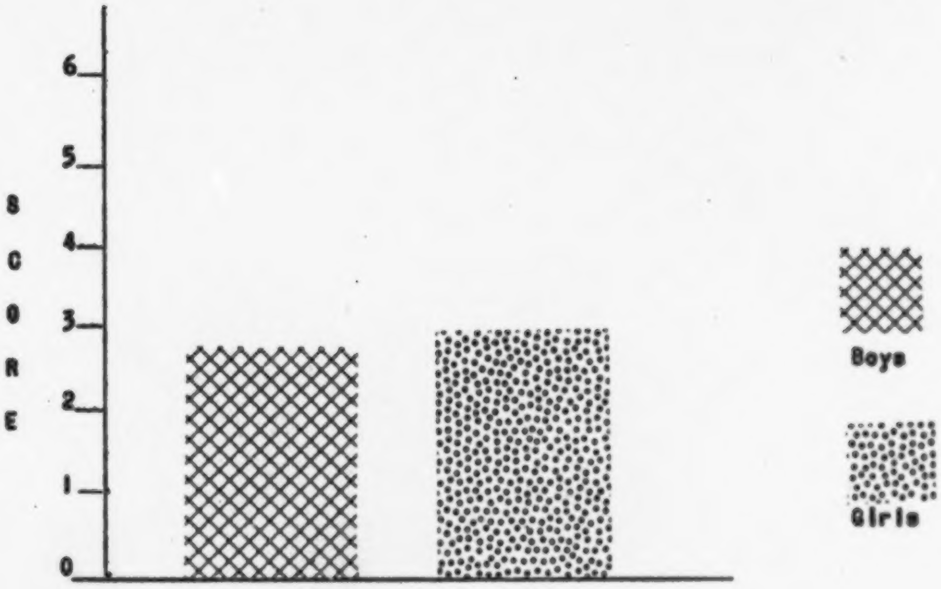


F = 7.66 (3.78)

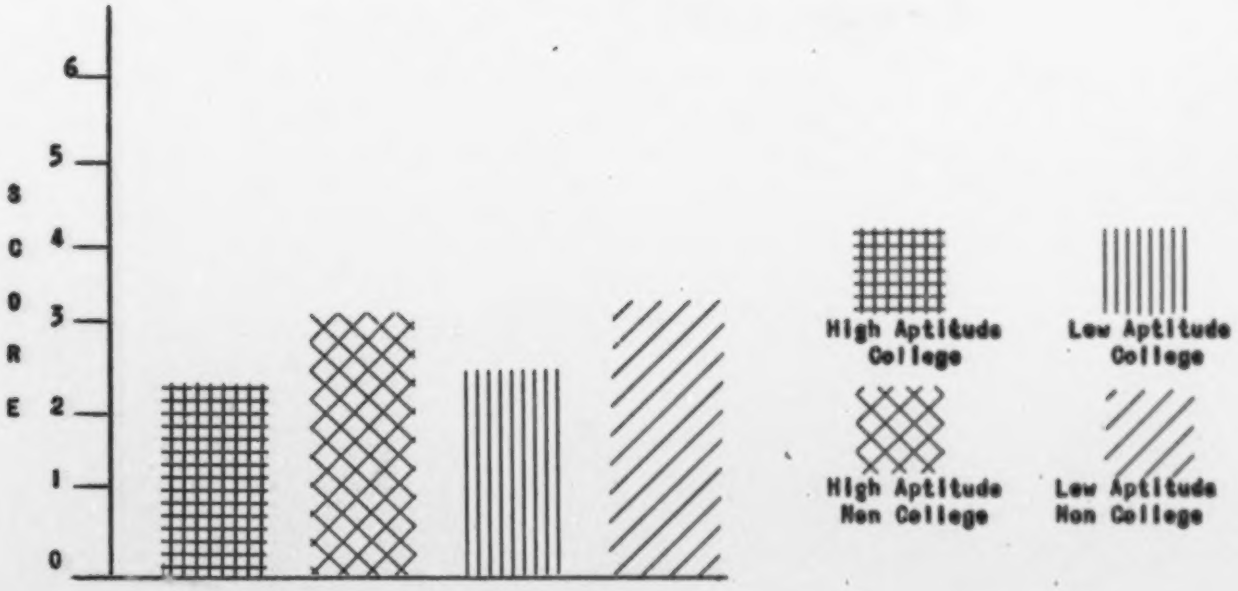
Y.E.P.

Item 30

(Best Friend's Sentiments)



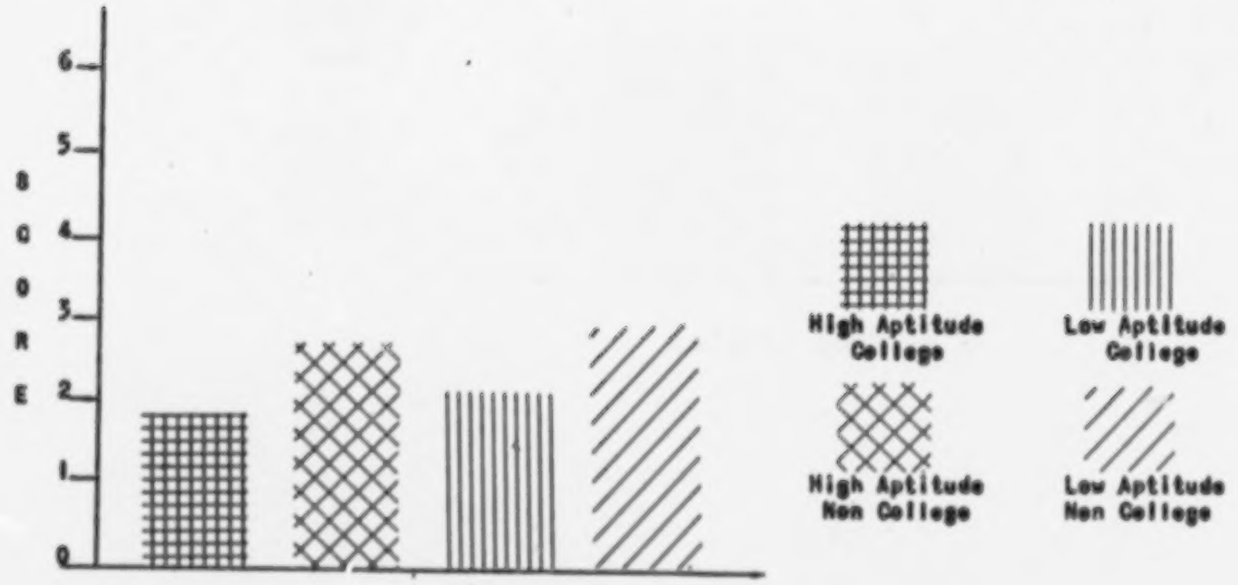
F = 18.03 (6.64)



F = 97.26 (3.78)

Y.E.P.

Average of All Items

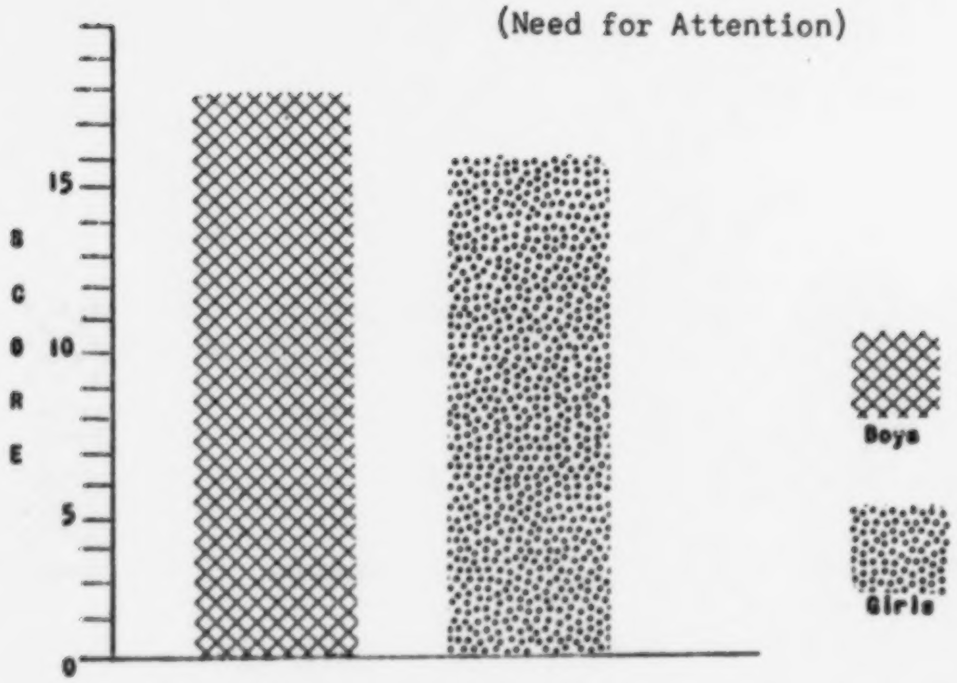


F = 62.91 (3.78)

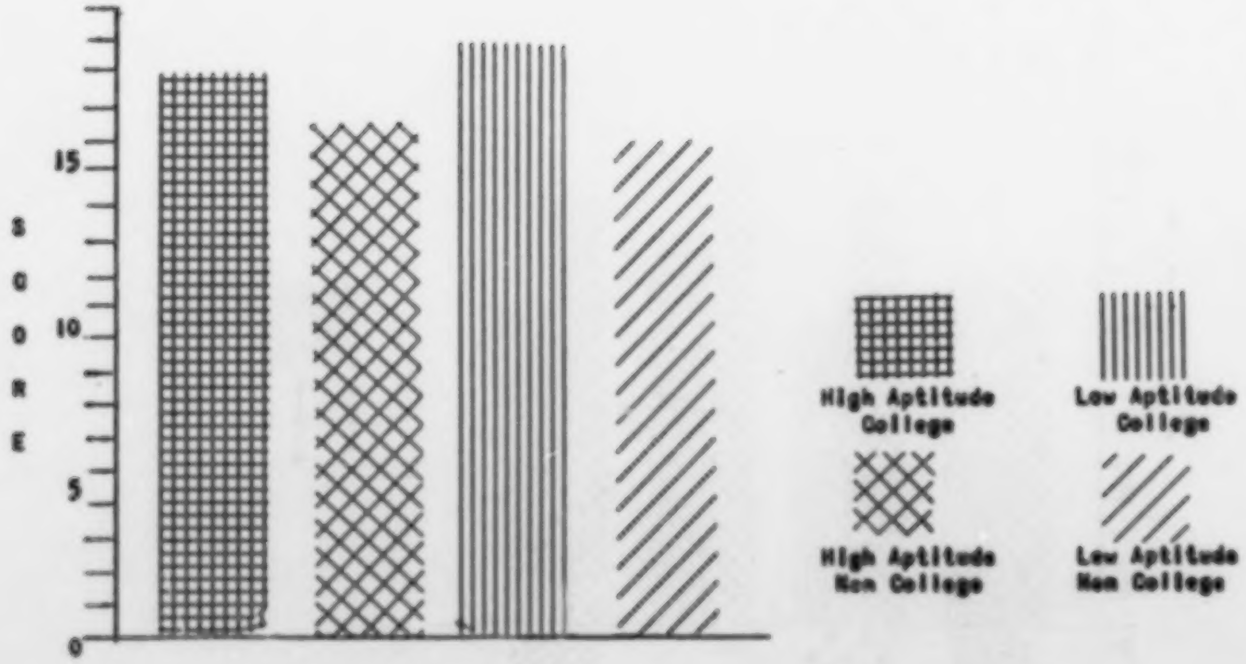
D F Opinion Survey

Factor 1

(Need for Attention)



F = 19.86 (6.64)

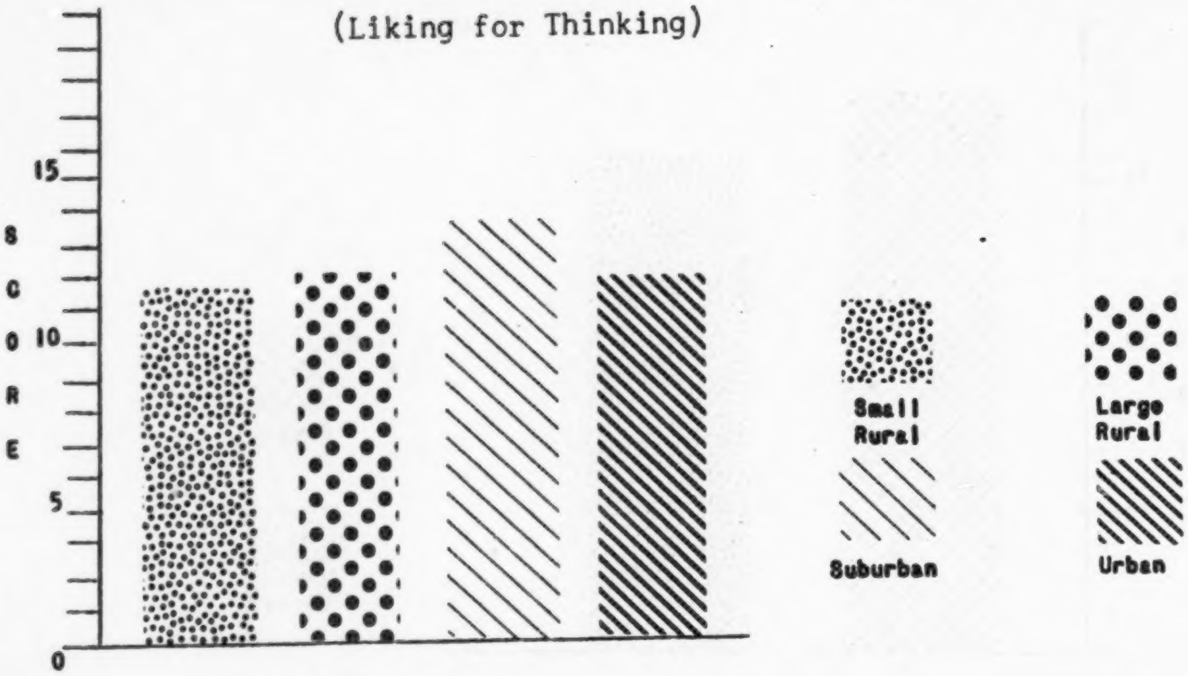


F = 11.81 (3.78)

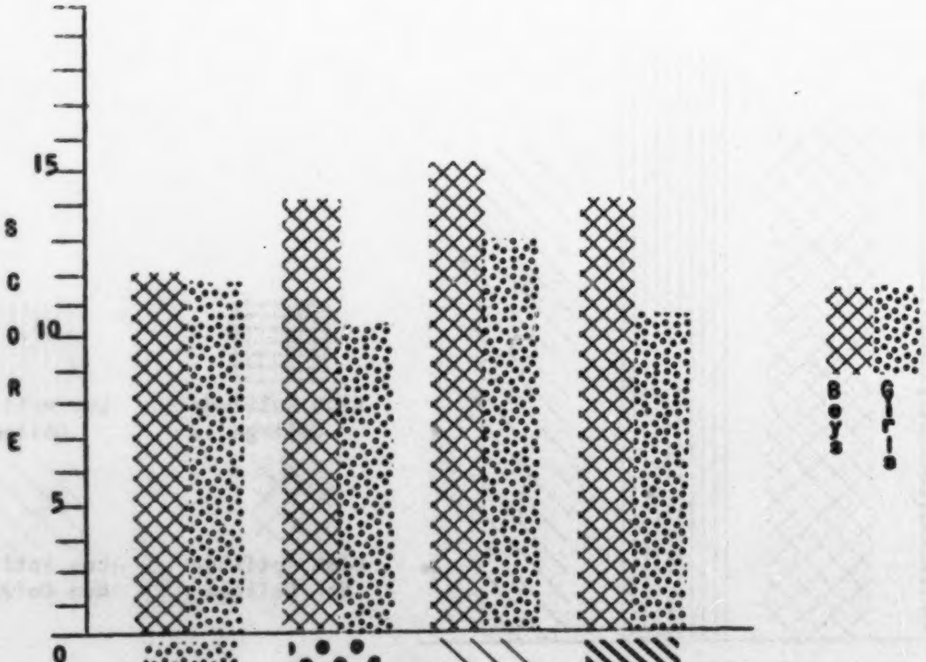
D F Opinion Survey

Factor 2

(Liking for Thinking)



F = 4.98 (3.78)

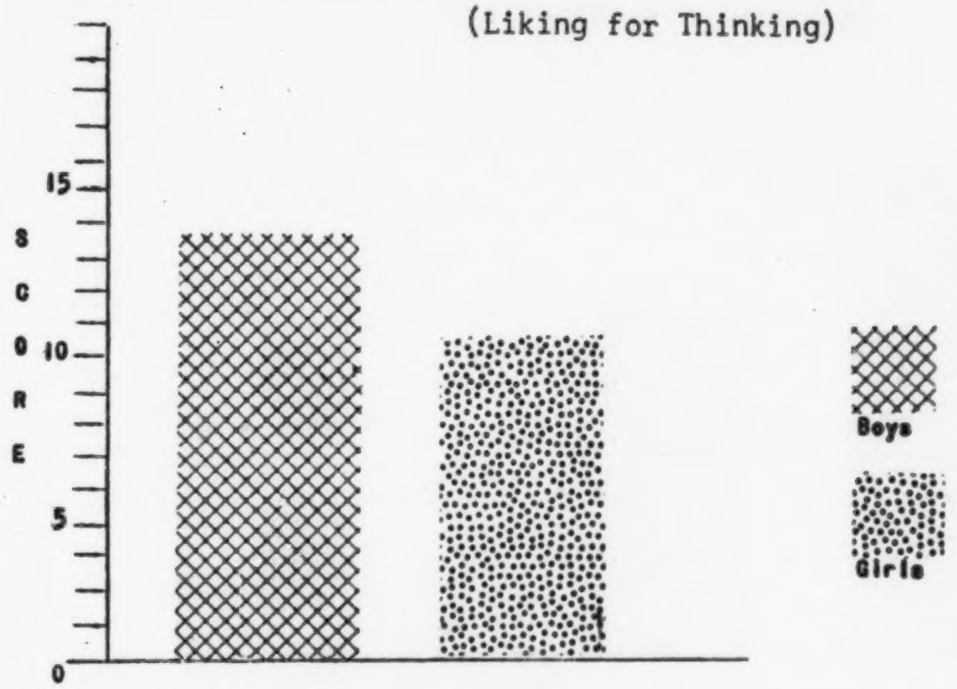


F = 4.06 (3.78)

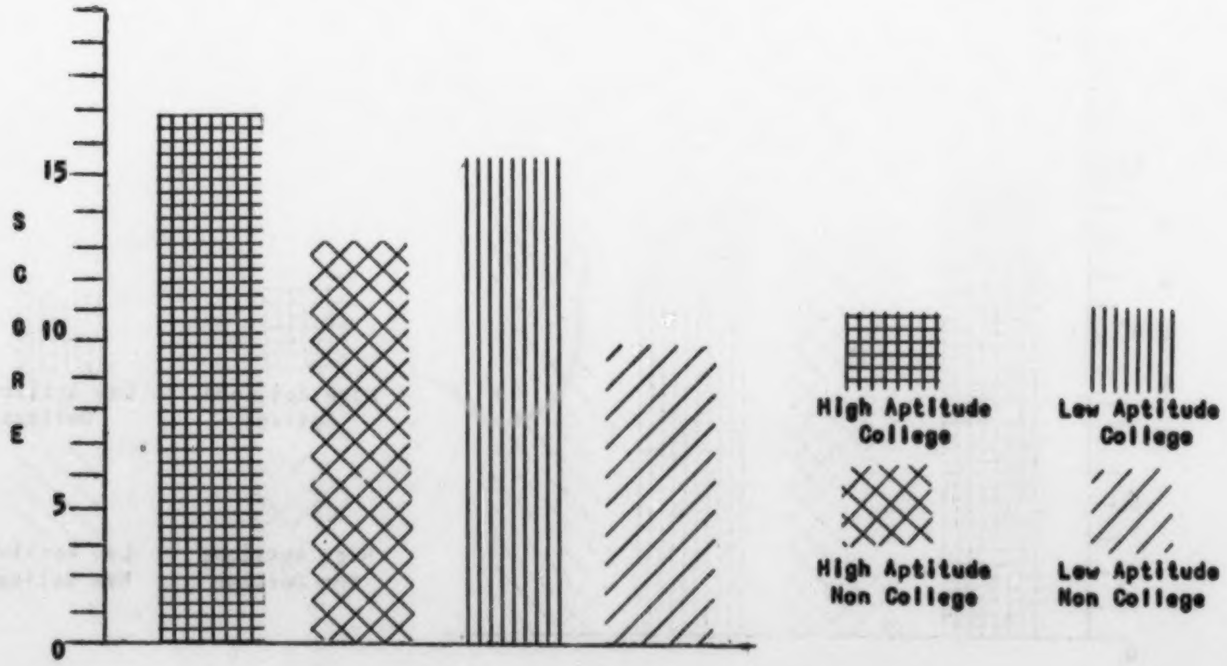
D F Opinion Survey

Factor 2

(Liking for Thinking)



F = 47.04 (6.64)

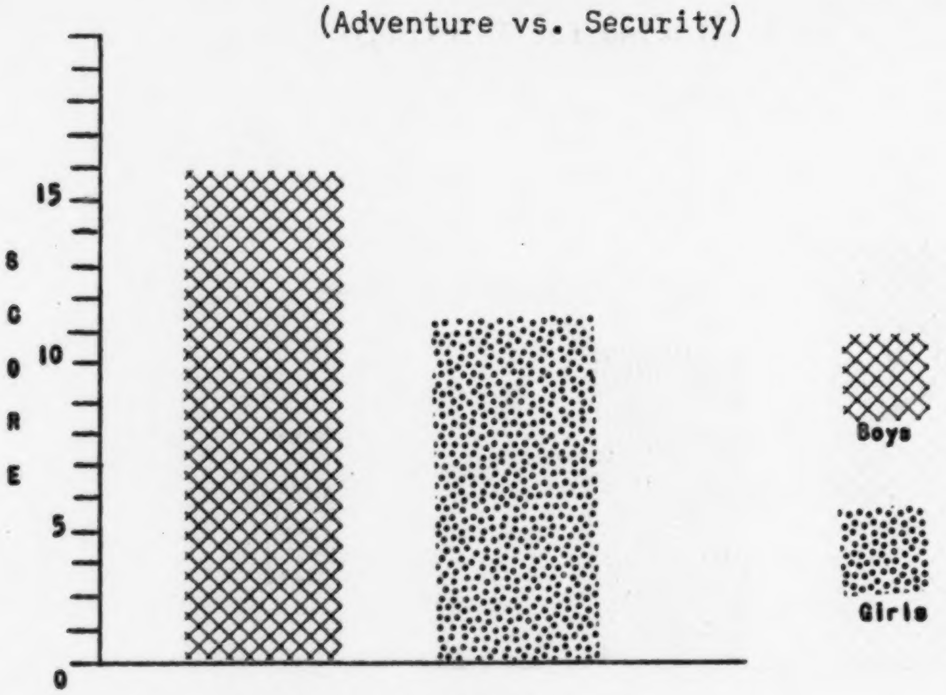


F = 44.00 (3.78)

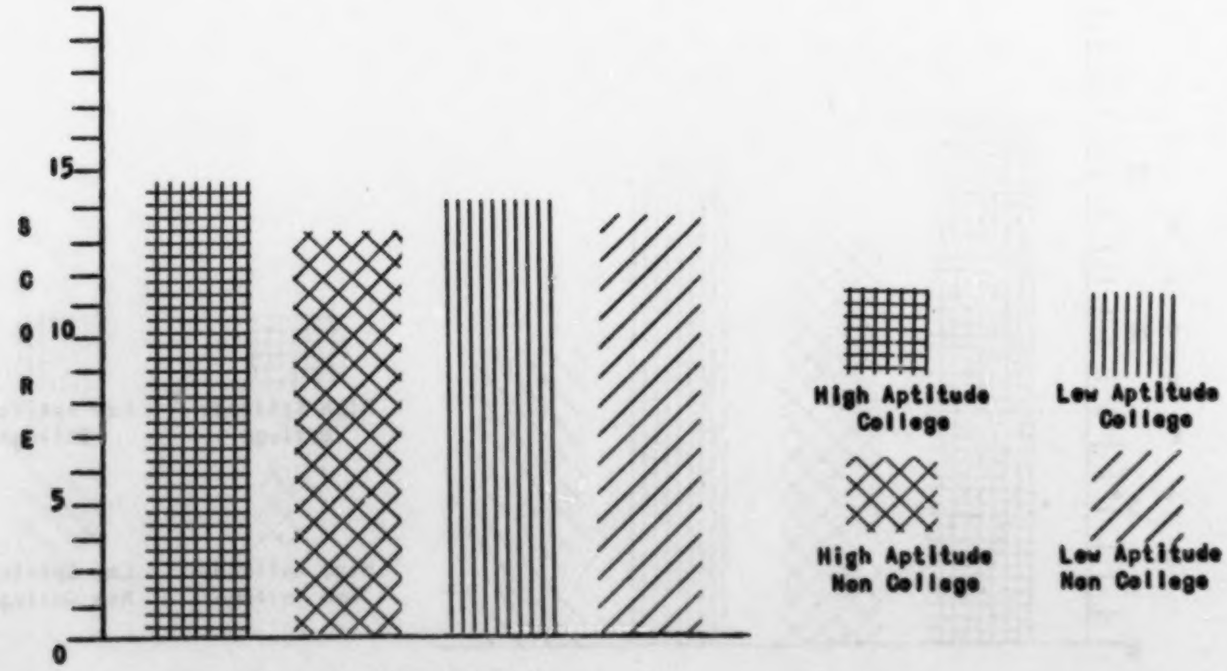
D F Opinion Survey

Factor 3

(Adventure vs. Security)



F = 238.14 (6.64)

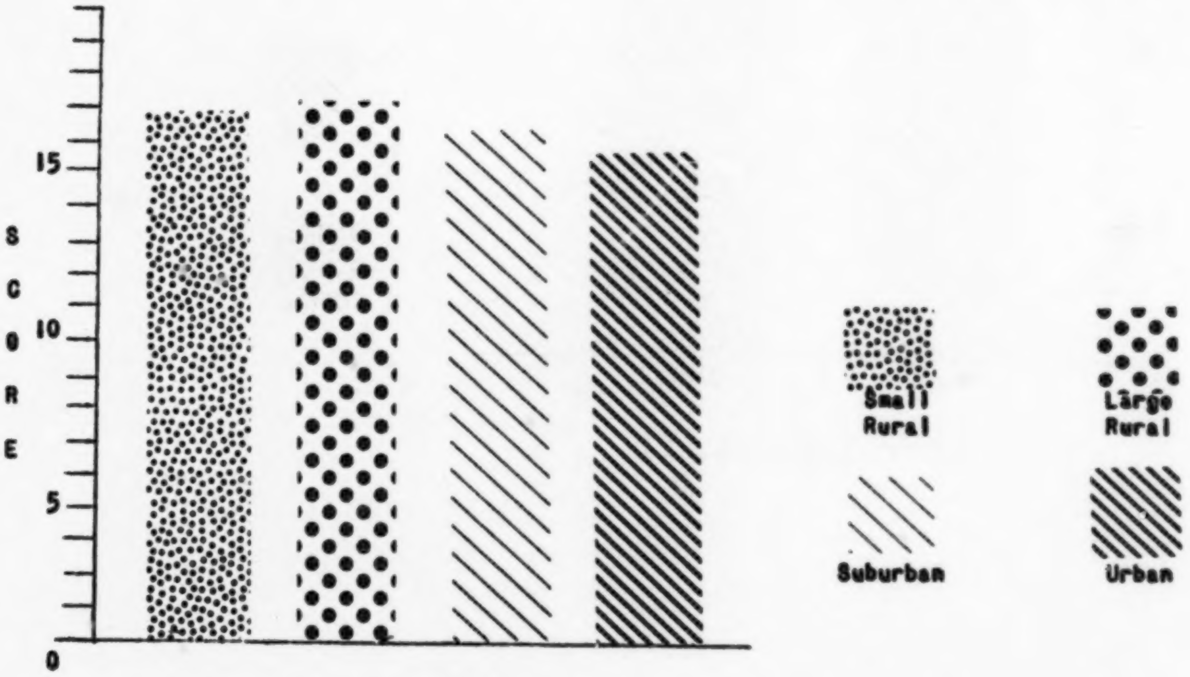


F = 6.00 (3.78)

D F Opinion Survey

Factor 4

(Self-reliance vs. Dependence)

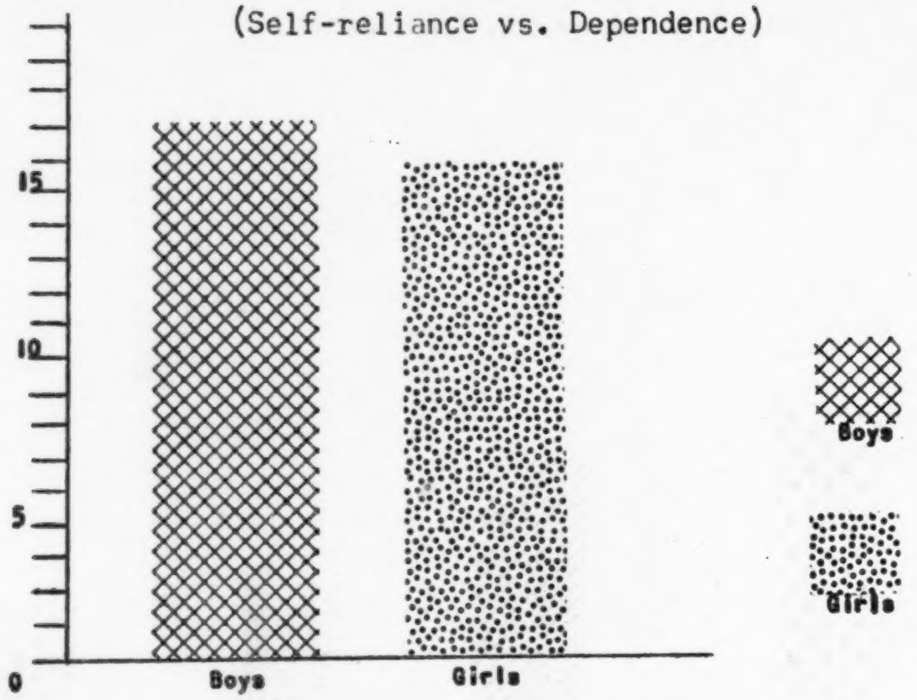


F = 6.45 (3.78)

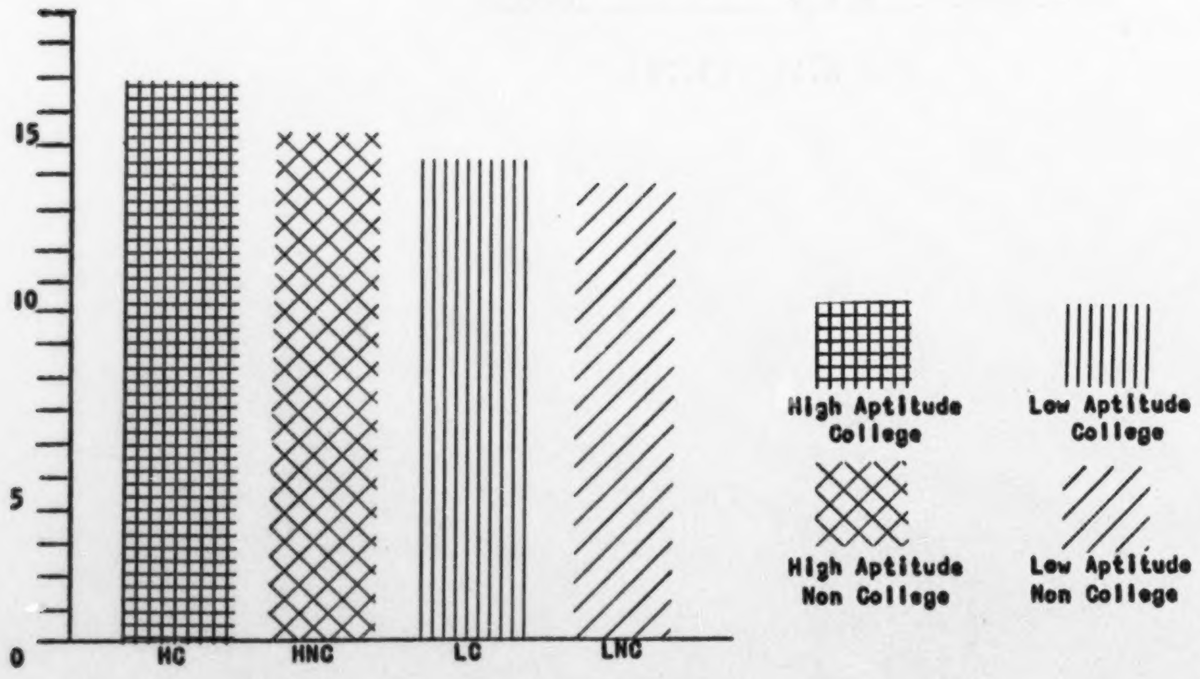
D F Opinion Survey

Factor 4

(Self-reliance vs. Dependence)



F = 11.58 (6.64)

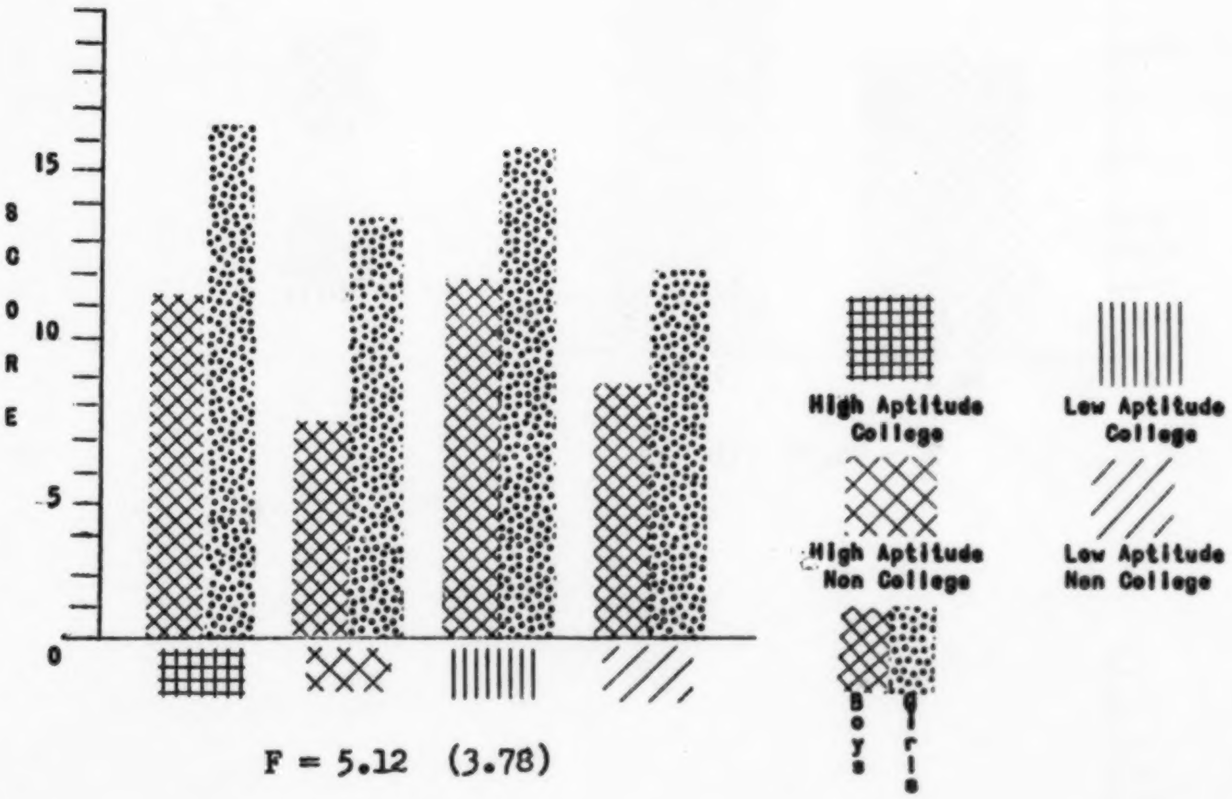


F = 23.17 (3.78)

D F Opinion Survey

Factor 5

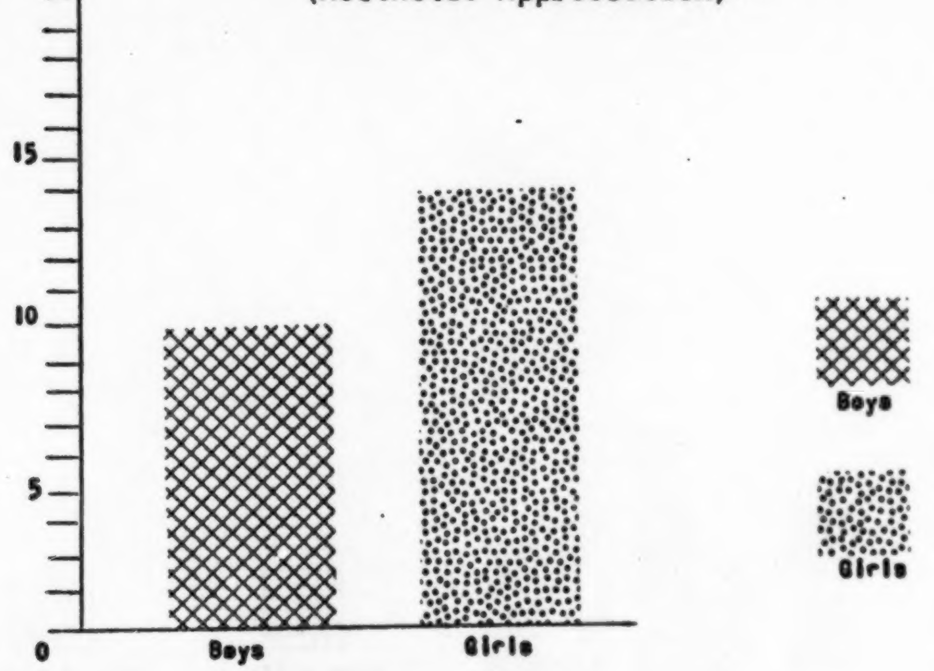
(Aesthetic Appreciation)



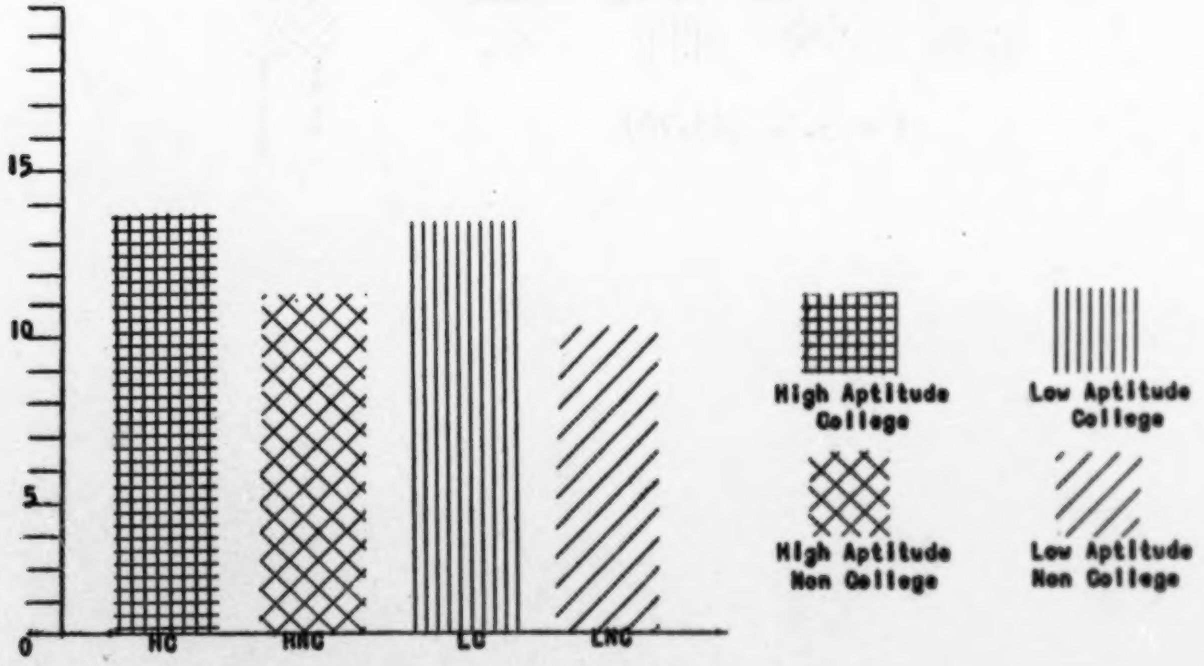
D F Opinion Survey

Factor 5

(Aesthetic Appreciation)



F = 96.37 (6.64)

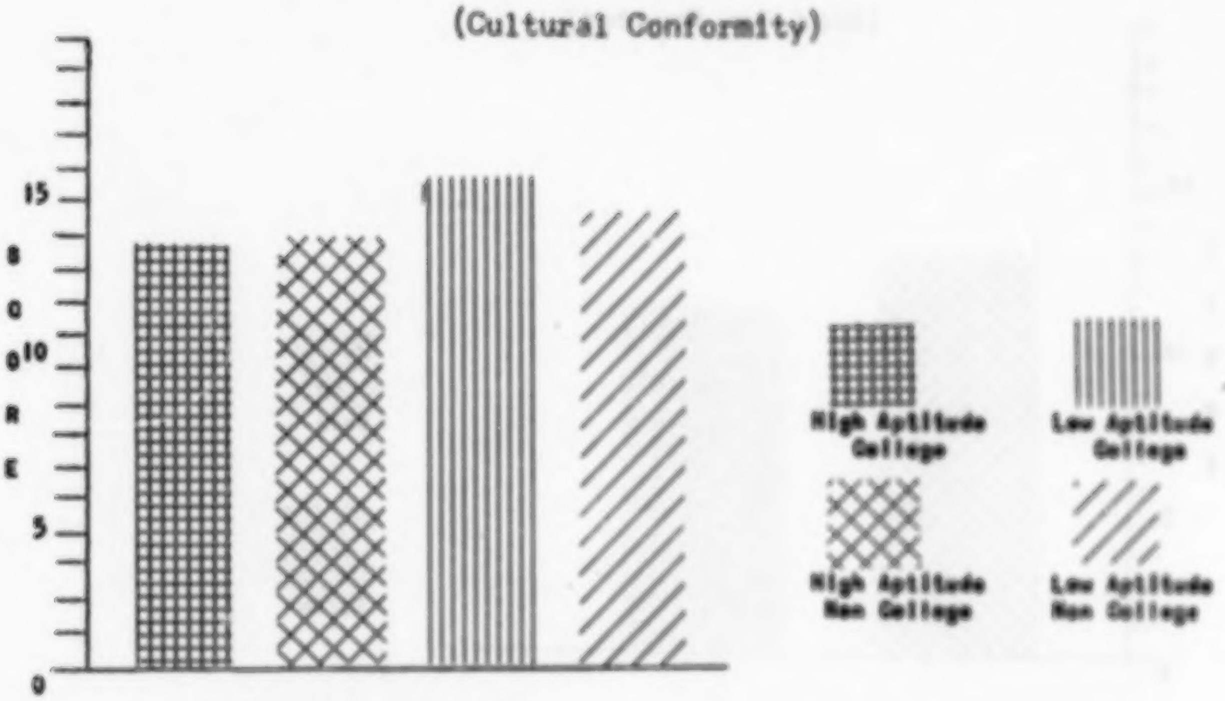


F = 13.88 (3.78)

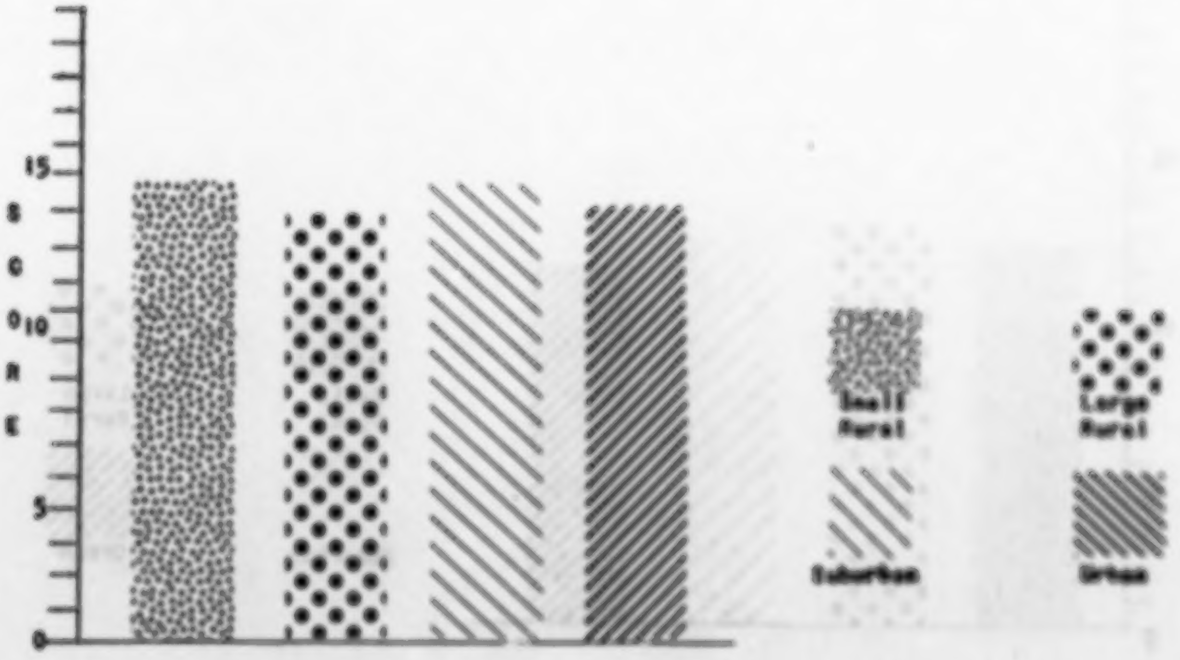
D F Opinion Survey

Factor 6

(Cultural Conformity)



F = 7.21 (3.78)

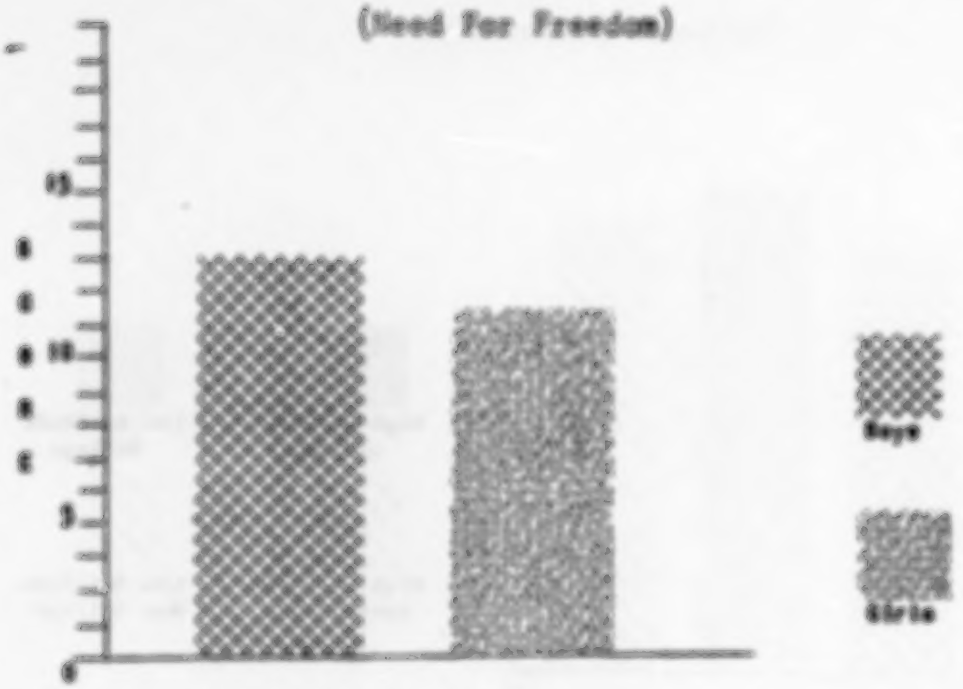


F = 4.49 (3.78)

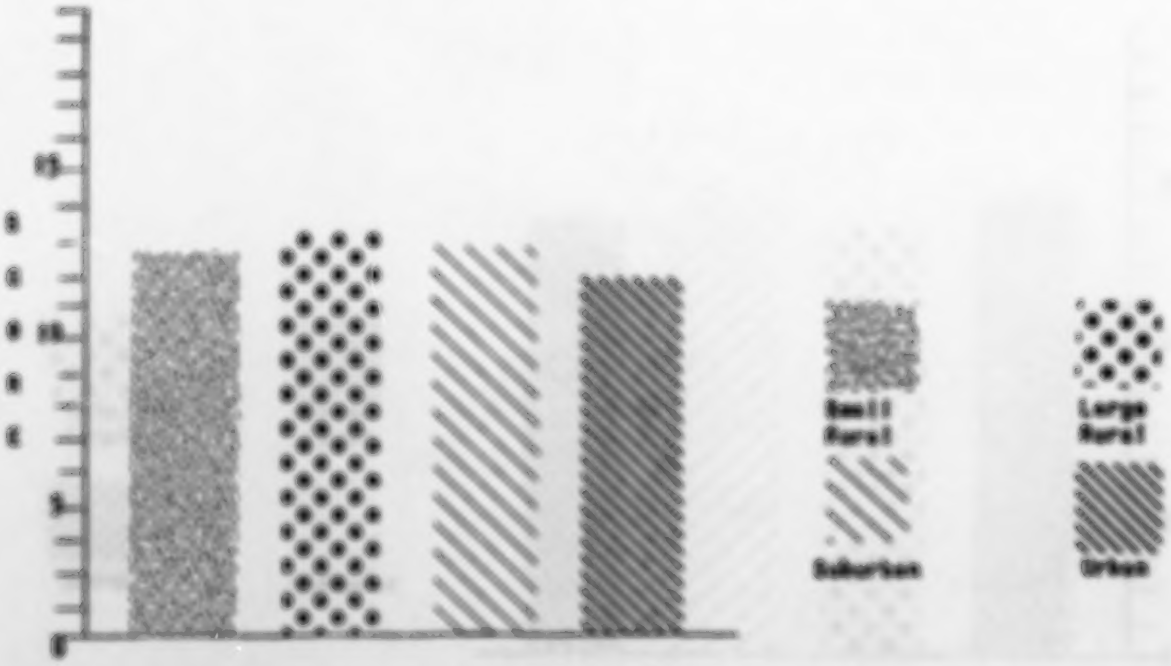
D F Opinion Survey

Factor 7

(Need For Freedom)



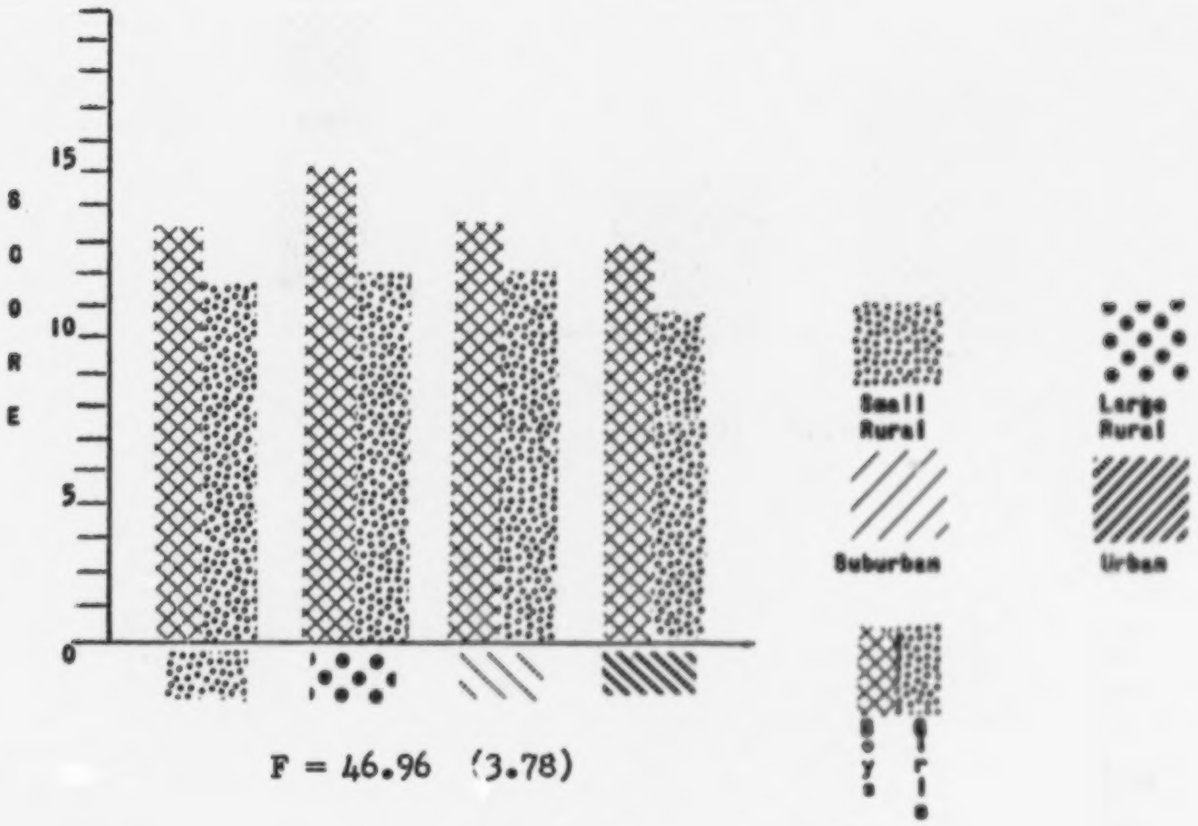
F = 45.39 (6.64)



F = 5.54 (3.78)

D F Opinion Survey

Factor 7

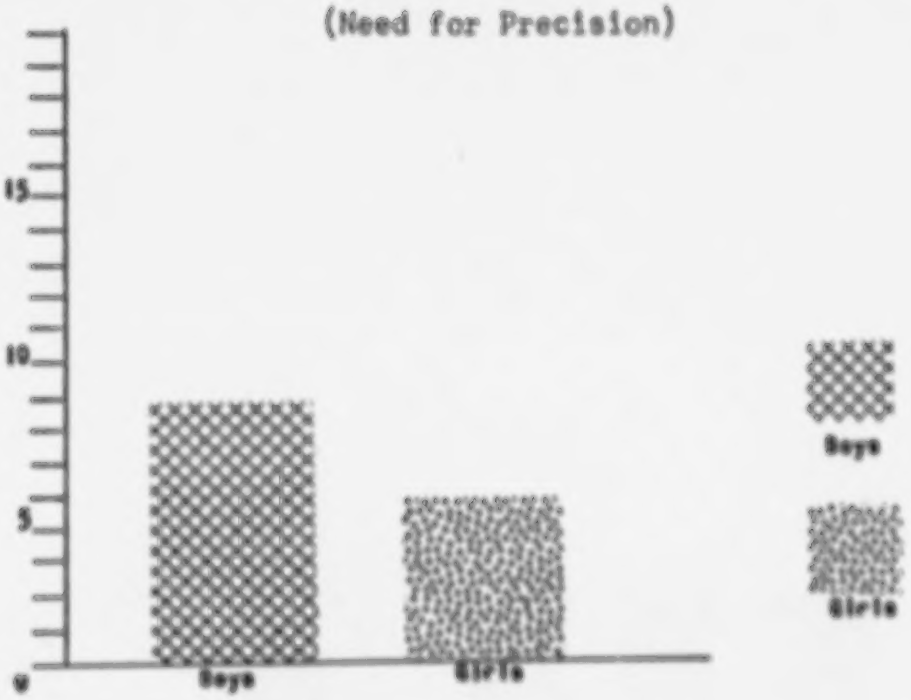


F = 46.96 (3.78)

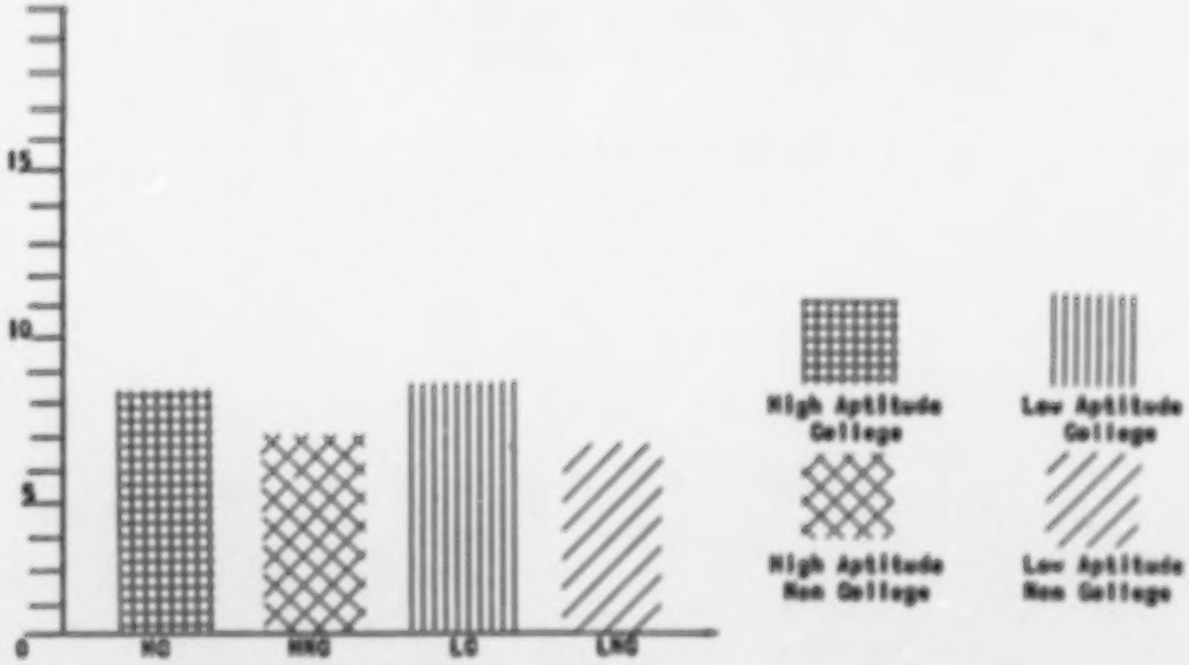
D F Opinion Survey

Factor 9

(Need for Precision)



F = 566.49 (6.64)



F = 4.82 (3.78)

Appendix C

FILM SCRIPT AND SCENERIO # 1

Title: THE AMERICAN DREAM
For : N.D.E.A. Research Project
Date : April 4, 1960

SCENERIO	SCRIPT
1. INT. CU. WELL-KNOWN AND RESPECTED ACTOR WHO HAS A COLLEGE DEGREE IS HALF-SITTING ON THE FRONT OF A CLASSROOM DESK. FELT BOARD BESIDE HIM.	1. Hello, I'm Marvin Miller. Many of you may know me as Michael Anthony on "The Millionaire Program." I'm not in a classroom very often these days, but I once spent sixteen years of my life in rooms like this, so I feel right at home. My purpose is to introduce a motion picture which may be very important to some of you. Why it may be important can best be shown by these little cards --
2. CU. ACTOR MOVES TO FELT BOARD, PICKS UP WHITE CARD 2"x6" UPON WHICH IS PRINTED WORD "INFANCY". HE PLACES THE CARD AT ONE EDGE OF THE FELT BOARD.	2. This white card is six inches long and it represents the first six years of your life. These years were spent in infancy and early childhood.
3. CU. NEXT, HE PICKS UP BLUE CARD, 2"x8" UPON WHICH IS PRINTED WORDS "GRADE SCHOOL". HE PLACES THIS CARD ADJACENT TO THE FIRST SO THAT IT FORMS A CONTINUOUS LINE.	3. This blue card is eight inches long and represents the next eight years of your life. Most of these years were spent in grade school,

Appendix C--continued

	but all of them were more your parent's years than they were yours.
4. CU. ACTOR PICKS UP GREEN CARD, 2"x4" UPON WHICH IS PRINTED "H.S." HE PLACES THE CARD IN LINE WITH THE FIRST TWO, SO THAT ONE CONTINUOUS LINE IS FORMED.	4. This green card is four inches long and it represents your high school years. For many of you this card, too, is mostly used up. But, actually it still represents only a very short time in a very long future. Now, as I was saying, the reason this motion picture you are about to see may be very important to you is because it concerns this next period of your life.
5. MS. PICKS UP RED CARD 2"x47".	5. This red card is 47 inches long and it represents the 47 years from high school graduation to retirement at the age of 65. Of course, you plan for many wonderful years of leisure, travel and adventure even after retirement.
6. MS. HOLDS UP THE RED CARD.	6. But, it is this period of your life which this motion picture is about. (Slowly) Its purpose is to help you get the kind of

			life you want.
7.	ACTOR RETURNS TO HALF-SITTING POSITION ON THE FRONT OF THE DESK.	7.	Now it is viewed through the eyes of a woman. But, this certainly doesn't mean that it was meant for girls alone, anymore than a film made by men, is meant for men alone. This is the world--of which you will soon be an important part.

FILM SCRIPT AND SCENERIO # 1

Title: THE AMERICAN DREAM
For : N.D.E.A. Research Project
Date : April 4, 1960

SCENERIO	SCRIPT
Fade-in	
1. Title card - THE AMERICAN DREAM	
2. Produced by - - DEPARTMENT OF VISUAL INSTRUCTION GENERAL EXTENSION DIVISION	
3. FROM RESEARCH DIRECTED BY JACK EDLING, Ph.D., GRANTED FROM THE UNITED STATES OFFICE OF EDUCATION, DEPARTMENT OF HEALTH, EDUCATION AND WELFARE.	
4. CURTIS REID, Ph.D., Director WILLIAM RUSH, PHOTOGRAPHER JOHN DRISCOLL, Ph.D., SCRIPT CONSULTANT	
5. DESIGNER, DRESSMAKER AND BATHING SUIT MODEL. SCENE OF HAUTE-COUTURE.	American women have made a place for themselves which is unlike any in history. They have key positions in industry . . .
6. MODEL OFFICE. SECRETARY AND EXECUTIVE.	In the business world . . .
7. MODEL CLASSROOM. TEACHER AND PUPIL.	In teaching . . .
8. DOCTOR AND NURSE.	In the field of medicine . . .
9. STEWARDESS AND AIRPLANE.	And in transportation. Rewarding occupations are waiting for young people who seek them in the proper way.
10. CU - HOUSE-WIFE STIRRING IN A BOWL.	Making a home is important too.

	Most young women want a home.
11. MS.	
12. EXTERIOR OF HOUSE, HUSBAND AT ARRIVING.	And that means a husband too, a man who can be depended on, and looked up to for what he is and what he can do.
13. INTERIOR OF THE HOUSE, HUSBAND GREETS WIFE, GIVES HER A PRESENT.	A husband to love and a husband to make you feel safe and secure.
14. HUSBAND AND WIFE SIT DOWN/LOOK AT THE PRESENT.	Both love and feeling safe are important. How do we get them? How can we be sure that they will last? Some girls think that the best way
(ANIMATION BEGINS)	is to:
15. JANE EXITS SCHOOL, PROCEEDS DOWN STEPS TO THE FACTORY, WATCHES MEN WORKING.	Somehow or other get out of school -- alive! Take a look around. See what life has to offer. Find a man with a job.
16. JANE EYES ONE MAN, WINKS.	Lure him to his knees.
17. MAN ON KNEES, PROPOSES.	
18. OUTLINE OF CAR POPS ON.	If you're sure he has a car.
19. MARRIAGE SCENE.	And lead him to the alter.
20. SMALL DREAM HOUSE.	And then live happily ever after.
21. TRUCK APPROACHES.	This way certainly brings quick and easy results.
22. CU - UNLOADS FURNITURE.	But, the truth is that it doesn't last.

Appendix C--continued

23.	MS - TRUCK DEPARTS, BILL COLLECTORS COME.		There are always too many bill collectors around.
24.	CU - BILL COLLECTORS AT DOOR.		
25.	MS - BILL COLLECTORS BRING ON LIGHTNING FLASHES, TRUCK RETURNS.		The trouble with the quick and easy way is not enough money.
26.	CU - TRUCK TAKES AWAY FURNITURE.		
27.	MS - TRUCK DEPARTS, LIGHTNING DESTROYS HOUSE.		
28.	EXPENSES FLASH ON SCREEN, FOLLOWED BY: (THE FOLLOWING, FLASHING EVER FASTER)		The bills pile up faster and faster, and the husband who doesn't have special skills or education doesn't make enough money to keep up.
	TAXES	$40.	
	GAS	6.	
	POWER	8.	
	HOUSE	100.	
	FOOD	100.	
	CAR	40.	
	PHONE	4.	
	WATER	5.	
29.	COLLEGE GRADUATE HOLDS LARGE BAG OF MONEY, LABORER HOLDS A SMALL BAG OF MONEY.		On the average, men with education make much more money during their lifetime.
30.	COLLEGE GRADUATE WORKS AT A DESK, LABORER WORKS AT A MACHINE.		And they work at jobs not likely to be replaced by machines.
31.	MACHINE WORKS BY ITSELF.		
32.	LABORER DISAPPEARS.		
33.	LABORER UNLOADS HAND TRUCK		There are some jobs a man without advanced training can get.

34.	LIFT-TRUCK BRINGS A LOAD OF CARTONS.	But even now these jobs are fast being replaced by machines.
35.	WOMEN TYPING ARE REPLACED BY IBM MACHINE TYPING FORMS.	Maybe you expect to help pay those bills -- if you can find a decent job, that is. Automation is replacing women workers too.
36.	WOMAN WORKING IN LAUNDRY.	And lots of unskilled jobs are not very pleasant.
37.	WOMEN WORKING IN CANNERY	But life doesn't have to be like
38.	JANE EXITS HIGH SCHOOL AGAIN, PASSES FACTORY, CONTINUES ON TO COLLEGE CLASSROOM.	this. There is a pretty sure way to get the kind of life you want. It may be a little longer, and take a little more learning, but it lasts a lot longer and it doesn't end up the other way.
39.	SHE SITS DOWN.	
40.	JANE SINGLES OUT BOY WEARING CAP AND GOWN.	
41.	CAP AND GOWN APPEAR ON JANE.	
42.	JANE WINKS.	
43.	BOY ON KNEES, PROPOSES, BICYCLE POPS ON BACKGROUND.	The car may have to wait.
44.	MARRIAGE.	
45.	SMALL DREAM COTTAGE, TRUCK APPROACHES.	
46.	CU - TRUCK DISCHARGES FURNITURE.	But you will have the important things.
47.	MS - TRUCK DRIVES AWAY, SMALL COTTAGE TURNS INTO A BIG ONE.	And life is more secure.

48.	YOUNG WOMAN AT DRAFTING TABLE WITH TWO MEN.	And if you want to work, having an advanced education can open the door to an interesting career. Very often the atmosphere at work can mean the difference between living and just existing.
49.	FAMILY AT DINNER TABLE.	People with advanced training also have a better chance for a satisfying and enduring family life.
50.	BOY AND GIRL AT TRACK-MEET.	Money is important, but you have to like the same things too.
51.	SAME COUPLE IN LIVING ROOM AFTER MARRIAGE. WIFE PLAYS PHONOGRAPH, HUSBAND IS ANNOYED. (CUT CLOSE-UP OF HANDS AT PHONOGRAPH)	It's fun to do the same things now, but will it be the same after you are married?
52.	TEENAGER ON FLOOR LOOKING AT MAGAZINES.	Do you remember a few years ago being interested in things that now seem childish.
53.	SAME GIRL A LITTLE OLDER AT DRESSING TABLE, TEARS UP PICTURE OF ELVIS.	Girls change their interests, too.
54.	DIFFERENT BOY AND GIRL AT TRACK-MEET, GIRL NOT INTERESTED.	When people don't have the same interests, the chance for happiness is not very good.
55.	ANOTHER COUPLE STROLL THROUGH A WOODED AREA, FINALLY COME TO CAR.	It is not surprising that the divorce rate is much lower among people with advanced education

	than among high school graduates. A basic education may have been enough for the times in which your parents went to school, but the world is changing. Alert young men realize that today an advanced education is necessary to get what they want out of life. But do you realize that the wife of a college trained man should also be college trained. If she has the same interests and the same background there is a greater chance for sharing leisure and working together for a life of happiness and security.
56. STUDENTS ENTERING COLLEGE GATE.	Its true that getting an advanced education isn't easy, but since its the most sure way to get the kind of life you want - let's see what's involved in getting in.
57. BOY AND GIRL ENTER COLLEGE BUILDING.	Perhaps your grades have been only average, but no matter what your interests, you can find your place in some college or technical school.
58. GIRL AT COUNSELOR'S DESK.	You are given individual attention to find the things which interest

Appendix C--continued

	you most.
59. SAME GIRL WITH OTHERS IN CLASS LISTENING TO LECTURE.	Young people find that working and studying things they like is exciting and different. College allows you freedom in choosing what you want to study and explore.
60. BOY AND GIRL IN CHEMISTRY LAB.	Whether it be in science . . .
61. TWO BOYS IN MACHINE SHOP.	In mechanics . . .
62. GIRL IN LIBRARY.	Or the great ideas of all time.
63. SORORITY HOUSE SEQUENCES. (GIRLS EXIT FROM HOUSE TO CAR)	College isn't all work either. You will make life long friendships with others who like the same things you do. These days after high school can be the most exciting and wonderful in your whole life.
64. YOUNG WOMAN HANGING UP CLOTHES, HUSBAND COMES OUT, THEY GO OFF TO CLASS WITH BOOKS.	Being married needn't keep you from college today. Many colleges have nearly a third married students, and provide them with low-cost housing.
65. YOUNG MAN STUDYING AND BABY-SITTING AT THE SAME TIME.	Often, both husband and wife go to classes, work part-time, and if there are children, arrange their classes so one is always home.
66. YOUNG LADY TYPING.	You can earn part or all of your way.
67. YOUNG WOMAN APPLYING FOR A STUDENT LOAN.	Many students get scholarships or loans, which they repay after they

	get out of school.
68. COUPLE SITTING ON CAMPUS LAWN.	Of course, it is fun to be on a college campus.
69. YOUNG MAN COMPLETING CORRESPONDENCE LESSON.	But you can take correspondance courses.
70. GIRL TAKING TELEVISION COURSE.	Or get college credit from television courses.
71. STUDENTS ENTERING NIGHT SCHOOL.	Or go to night school.
72. GIRL CHECKING OUT BOOKS TO STUDENTS.	Education will get you what you want in life, and it is available to everyone who wants it.
73. MOTIVE-WIN AT VARIOUS PROFESSIONS.	Advanced education is the key to your place in this wonderful world, and to a full, rich, secure, and exciting life. Education is the way to make the AMERICAN DREAM come true for you.
74. STUDENTS EXITING HIGH SCHOOL. (SUPER ON END TITLE)	Music up.
75. THE BEGINNING.	

Appendix D

FILM SCRIPT AND SCENERIO # 2

Title: LIKE - GETTING OUT
For : N.D.E.A. Research Project
Date : October 4, 1960

VISUALS	SCRIPT
1. INT. CU. WELL-KNOWN AND RESPECTED ACTOR WHO HAS A COLLEGE DEGREE IS HALF-SITTING ON THE FRONT OF A CLASSROOM DESK. FELT BOARD BESIDE HIM.	1. Hello, I'm Marvin Miller. Many of you may know me as Michael Anthony on "The Millionaire Program." I'm not in a classroom very often these days but I once spent sixteen years of my life in rooms like this so I feel right at home. My purpose is to introduce a motion picture which may be very important to some of you. Why it may be important can best be shown by these little cards --
2. CU. ACTOR MOVES TO FELT BOARD, P[illegible] UP WHITE CARD 2"x6" UPON WHICH IS PRINTED WORD "INFANCY". HE PLACES THE CARD AT ONE EDGE OF THE FELT BOARD.	2. This white card is six inches long and it represents the first six years of your life. These years were spent in infancy and early childhood.
3. CU. NEXT, HE PICKS UP BLUE CARD, 2"x8" UPON WHICH IS PRINTED WORDS "GRADE SCHOOL". HE PLACES THIS CARD ADJACENT TO THE FIRST SO THAT IT FORMS A CONTINUOUS LINE.	3. This blue card is eight inches long and represents the next eight years of your life. Most of these years were spent in

Appendix D--continued

	grade school, but all of them were more your parent's years than they were yours.
4. CU. ACTOR PICKS UP GREEN CARD, 2"x4" UPON WHICH IS PRINTED "H.S." HE PLACES THE CARD IN LINE WITH THE FIRST TWO, SO THAT ONE CONTINUOUS LINE IS FORMED.	4. This green card is four inches long and it represents your high school years. For many of you this card, too, is mostly used up. But, actually it still represents only a very short time in a very long future. Now, as I was saying, the reason this motion picture you are about to see may be very important to you is because it concerns this next period of your life.
5. MS. PICKS UP RED CARD 2"x47".	5. This red card is 47 inches long and it represents the 47 years from high school graduation to retirement at age of 65. Of course, you plan for many wonderful years of leisure, travel and adventure even after retirement.
6. MS. HOLDS UP RED CARD.	6. But, it is this period of your life which this motion picture is about. (Slowly) It's purpose is to help you get the kind of life

			you want.
7.	ACTOR RETURNS TO HALF-SITTING POSITION ON THE FRONT OF THE DESK.	7.	Most of you will do pretty well. But, you won't live the same kind of life your parents did. I suggest you take another look at what life really has to offer.

Appendix D

FILM SCRIPT AND SCENARIO # 2

Title: LIKE - GETTING OUT
For : N.D.E.A. Research Project
Date : October 4, 1960

VISUAL	SCRIPT
FADE IN	
A. Title Card No. 1 - "Like-Getting Out" (40 frame dissolve)	(A low lazy voice like Yogy Bear) "Ya Dad, Like- Getting Out" (emphasis on the "Out") Title music fades in - modern - similar to theme music to "Peter Gunn".
B. Title Card No. 2 - Produced by - DEPARTMENT OF VISUAL INSTRUCTION GENERAL EXTENSION DIVISION OREGON STATE SYSTEM OF HIGHER ED. (40 frame dissolve)	
C. Title Card No. 3 - From Research Directed by: JACK V. EDLING, Ph.D., UNDER A GRANT FROM THE UNITED STATES OFFICE OF EDUCATION, DEPARTMENT OF HEALTH, EDUCATION AND WELFARE. (fade-out) (fade-in)	
D. Title Card No. 4 - CURTIS REID, Ph.D., DIRECTOR JOHN DRISCOLL, Ph.D., SCRIPT CONSULTANT WILLIAM RUSH, PHOTOGRAPHER	
1. BILL IN BED, WAKES UP AND SHUTS OFF ALARM.	Title Music fades. Loud alarm clock sounds repeatedly.
2. MOTHER AT STOVE STIRRING CEREAL. JEANNIE COMES IN.	Mother's voice: (dubbed). "Bill, you better get down here. Hi, Jeannie -- your brother's gonna be late again".
3. BILL SLOUCHES IN, SITS AT TABLE, MOTHER DIPS OUT CEREAL, BILL STARTS TO EAT.	Slow music.

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4.	JALOPY DRIVES UP OUTSIDE, STOPS.	Horn sounds over music.
5.	INSIDE, BILL WAVES THROUGH WINDOW.	Music steps up in tempo.
6.	OUTSIDE IN CAR, FRIEND WAVES BILL TO COME OUT.	
7.	BILL FINISHES CEREAL, RUSHES OUT.	
8.	OUTSIDE, BILL JOINS BOYS IN CAR, DRIVES TO SCHOOL, ENTER HIGH SCHOOL BELATEDLY.	Grotesque - comedy type music in.
9.	BILL SNEAKS INTO CLASSROOM.	Music fades.
10.	BILL TAKES PLACE IN CHAIR BETWEEN GIRL AND BOY, ASKS GIRL FOR A PENCIL.	(Man's Voice) "Let me repeat that the sum of the angles of a triangle is always equal to two right angles. If three parts of a triangle, at least one of which is a side, are known, the remaining parts may be found. I'll give you an example of how this works. Let's say that the lengths of two sides of a triangle and the angle between them is known. It is possible to construct the triangle geometrically and get the other side and - - -
11.	GIRL LOOKS AT BILL WITH FROWN ON FACE, HANDS HIM A PENCIL.	Other two angles approximately by measurement. Trigonometry computes the missing parts. An angle is determined by certain ratios.

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		These ratios are called *trigonometric ratios or functions*. Now. Here we have an acute angle, and when we draw - - -
12.	BILL SLOUCHES DOWN IN SEAT TO LISTEN TO MATH PROFESSOR.	A perpendicular from any point on this terminal side of the triangle to the initial side we find these--(Music Up)
13.	(dissolve) BILL IN ANOTHER CLASSROOM SLEEPING ON DESK, BOY BEHIND WAKES HIM UP, BILL LISTENS IN BORED MANNER, SLOUCHES BACK, LOOKS AT CLOCK 10:08.	(Woman's Voice) (oversold on poetry) - - may not touch. City or country, love or death, nature, history, humor, despondency, travel, reading, warfare, friendship, reform. The poet may describe the horrors of war and the gaping wound of a dying youth. Or he may picture the sudden flight of the hummingbird." (Music Up)
14.	(dissolve) CLOCK READS 10:43. (Another classroom)	
15.	BILL LOOKING UP AT CLOCK IN ANOTHER CLASSROOM, SEEMS RESTLESS AND BORED.	(Second woman's voice) (More harsh) "A business depression is a pattern of nearly all forms of social insecurity. No topic in economic history is discussed more often or from more different points of view. Although its general causes and accompani-

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	ments have been well described for many decades, opinions as to its general nature are still unsettled. In opposition to majority belief that a depression is wholly injurious, a few observers have regarded it as a beneficial restraint upon expansion and - - (Music up)
16. (dissolve) CLOSE-UP, BILL DOODLING ON NOTEBOOK. CAMERA PULLS OUT TO REVEAL BILL AT DESK, ROGER EDDY, WALKS BEHIND, TEACHER COMES UP IN FRONT AND CALLS BILL TO ATTENTION.	(Man's voice, Speech teacher) "Roger Eddy, will you give the next speech?" (Music - up and down) Narrator: This is Bill Williams. He's bright enough but he's as bored as he can get. He's getting along all right - not too much of a success in high schools, but who cares about "computing the missing parts of a triangle" or "picturing the sudden flight of the hummingbird". The only thing Bill really wants from high school is *out*.
17. ROGER EDDY GIVING SPEECH.	Roger, here, has had a pretty good time in high school. His parents have encouraged him to study and he is well liked and has a good future. Fifteen years from now, Roger prob-

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	ably will have a really interesting job.
	Roger and Bill
	Same school, same class, same age, same ability, but very different futures in store for them. Roger has made good in high school and will make good in life. His next step is going to college. Bill wants to make good, too. His next step is to get a job--any job with a paycheck.
18. (dissolve) BILL IN STILL ANOTHER CLASSROOM, USUAL POSTURE, LOOKS UP AT CLOCK. 11:10	First he has to get out of high school.
19. GRADUATING SCENE, BILL AND ROGER RECEIVE DIPLOMAS. (fade-out)	Boy, that'll be the day.
20. FACTORY SCENE, LOOKING PAST GIRL WORKERS, WE SEE BILL WORKING AT A MACHINE. (fade-in)	Music Up.
21. MEDIUM SHOT, BILL AT MACHINE.	Well, Bill's got 'er made. He got away from all that kid stuff at school.
22. (Extreme close-up) BILL'S HANDS WORKING.	Music Up.
23. MEDIUM SHOT, BILL.	
24. CLOSE-UP, FACTORY WHISTLE.	
25. WORKERS EXIT BUILDING, BILL AND	

	FRIEND COME OUT.	
26.	BILL WALKS ACROSS PARKING LOT TO FANCY AUTO, GETS IN, DRIVES OFF. (fade-out)	He's earning what he thinks is pretty good money, he gets paid every week and he's got his own car to drive.
27.	CLOSE-UP, CLOCK 10:00, PANS DOWN TO BILL WORKING AT MACHINE. (fade-in)	Time passes: a year has gone by and Bill is still at it. He's found out that a routine job can really be boring - - there's more to it than a pay check every week.
28.	MEDIUM SHOT, BILL WORKING, FOREMAN WALKS UP, PICKS UP PIECE OF WORK, STARTS "EATING OUT" BILL.	The foreman is a lot tougher than any teacher he ever had.
29.	CLOSE-UP, BILL WORKING, RESPONDING TO SCOLDING.	
30.	MEDIUM-SHOT. FOREMAN WALKS OFF, BILL RESUMES WORK. (fade-out)	
31.	(fade-in) CLOSE-UP, BILL WORKING, LOOKS AT CLOCK, 2:25.	
32.	MEDIUM SHOT, FOREMAN AND ENGINEER TALKING, FOREMAN LEAVES, ENGINEER WALKS OVER TO BILL'S MACHINE AND TALKS WITH HIM.	At first Bill didn't ask for much. But now he realizes that he wants more out of life - - a more interesting job with variety and challenge - - and the only guy he knows who has a job like this is the plant engineer. The engineer's job is to figure out better ways of making things. Bill's job is just plain work and its no

	fun - - in fact it's getting worse all the time. The engineer might even figure out a way to do away with it.
33. CLOSE-UP, BILL'S FACE, HOPE-FUL LOOK APPEARS.	He knows this kind of work is not for Bill. He's hinted to Bill that it would be smart to get some advanced training. Bill thinks it might be O.K., but he's got his car payments.
34. MEDIUM-SHOT, BILL AND ENGINEER, WALKS OFF, BILL RESUMES WORK.	Still - - Bill wonders what it would be like to do this sort of thing forever.
35. CLOSE-UP, BILL GETS UP, WALKS OVER TO FRIEND AT OTHER MACHINE, SUGGESTS THEY GO OUT FOR A SMOKE.	Well, time for a break. Bill has an idea that maybe he made a mistake about being so eager to get out of school and to go to work. Best thing is to see what his friend thinks.
36. MEDIUM-SHOT, EXTERIOR, BILL AND FRIEND COME OUT, SIT DOWN ON CURB, LIGHT UP, AND TALK. (close-up of each face.)	Bill asks what he thinks of the idea of getting out of this tiresome job and learning to do something like the engineer does - - there's no doubt, it's a good idea - - -
37. MEDIUM-SHOT, TWO-SHOT BILL AND FRIEND LOOK AT TIME, DOUSE CIGS, GO BACK TO WORK.	But then there's always the question of money and that high school record

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	--the car payments--lots of angles to this thing. But- -time to get back to the old grind again.
38. (dissolve) MEDIUM-SHOT, BILL WORKING.	
39. CLOSE-UP, BILL WIPES BROW, LEANS BACK.	But wouldn't it be great to be doing something you liked to do - - and still be making more money than you are now - - -
40. EXTREME CLOSE-UP, BILL'S FACE, EYES GET HEAVY, DOZES OFF.	(Bill's voice) There must be a better way to spend your life. I wonder if I had learned more before I went to work - - -
41. ANIMATION BEGINS, SEQUENCES. (fade-in) BILL WORKING A PRESS.	Suppose I do what the engineer thinks I should do.
42. BILL RISES.	
43. BILL EXITS ROOM.	What if I quit this crumby job
44. "SCHOOL OF HARD KNOCKS" CLOSE-UP.	Just say that this is another school
45. LONG-SHOT, BILL LEAVING "SCHOOL OF HARD KNOCKS".	- - and again all I want is out.
46. COLLEGE GATES.	What if I went to a place where I could find something to do that I really liked.
47. ADMINISTRATION BUILDING.	He said they would help me.
48. BILL ENTERS ADMINISTRATION BUILDING.	
49. CLOSE-UP LETTERING "ADMINISTRATION BUILDING".	

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50.	BILL ENTERING COUNSELOR'S OFFICE.	
51.	CLOSE-UP OF SIGN "COUNSELOR".	
52.	BILL IN DISCUSSION WITH COUNSELOR.	I might as well tell him I don't have anybody to pay my way.
53.	CLOSE-UP OF COUNSELOR.	
54.	BILL AND COUNSELOR.	You mean there are lots of ways to get dough - - -
55.	BILL WALKS INTO STUDENT LOAN OFFICE.	borrow - - -
56.	CLOSE-UP "STUDENT LOAN OFFICE".	
57.	BILL EXITS STUDENT LOAN OFFICE.	
58.	BILL DOES "TAKE!"	and work part time.
59.	BILL IN CAFETERIA.	
60.	BILL AND COMPANION.	O.K., So I can make it, but make what?
61.	CLOSE-UP "CHEMISTRY"	
62.	CHEMISTRY CLASS.	
63.	STUDENT AND PROFESSOR.	
64.	BILL AND COMPANION ENTER CLASSROOM.	
65.	CLOSE-UP "MECHANICS".	
66.	MECHANICS CLASS.	
67.	CLASS WORKING ON PROPELLER.	
68.	BILL AND COMPANION ENTER CLASSROOM.	
69.	CLOSE-UP "ENGINEERING".	
70.	BILL, SMILING.	Yeh! This is for me.

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71.	BILL, AT DRAWING BOARD.	
72.	LONG SHOT, BILL AND COUNSELOR.	I can live in the dorm - - -
73.	WALKING PAST DORMS, ETC.	Even got one for married students.
74.	HOUSES WITH TV ANTENAES.	You can even take some courses over TV - - -
75.	CLOSE-UP, TV ANTENNAE.	
76.	STUDENT WATCHING TV CLASS.	
77.	CLOSE-UP, STUDENT STUFFING ENVELOPE.	or by correspondence.
78.	STUDENT SEALING ENVELOPE.	
79.	MAILING LESSON.	
80.	CLOSE-UP, "COLLEGE REGISTRATION".	Boy, I wish I'd have done this right after high school.
81.	"BILL!" WRITTEN ON REGISTRATION BLANK.	
82.	CLOSE-UP OF COUNSELOR.	Talking to this guy was easy.
83.	STUDENT AND COUNSELOR SHAKING HANDS.	
84.	STUDENTS AT DRAWING BOARDS.	And this, doing something you like to do - - -
85.	STUDENTS IN CHEMISTRY LAB.	
86.	BOY AND GIRL AT SODA FOUNTAIN.	that leads somewhere
87.	CLASS IN SESSION.	
88.	GRADUATE IN CAP AND GOWN.	really pays off.
89.	CLOSE-UP, GRADUATE IN CAP AND GOWN.	
90.	CLOSE-UP, OFFICE WORKER.	First thing I'm gonna do when I graduate - - -

91.	WORKER AT MACHINE	is get rid of that cotton pickin' stamper.
92.	FOREMAN PUSHES BUTTON.	
93.	WORK IS STOPPED. CLOCK 3:00.	
94.	CLOCK SPEEDED UP.	Then I'm gonna speed up that clock-
95.	BILL ENTERS DOOR MARKED "ENGINEERS ONLY".	- - and do the kind of things I like to do.
96.	CLOSE-UP SIGN "ENGINEERS ONLY".	
97.	(dissolve to live action) CLOSE-UP BILL'S FACE, ASLEEP, JERKS AWAKE.	(World of reality music--stamp of machine-type.)
98.	CLOSE-UP, BILL WORKING.	Boy, I thought high school was dull, but look at me now plugged into this machine eight hours a day - - with that cockeyed foreman watching me closer than any teacher ever did.
99.	MEDIUM-SHOT, BILL WORKING, LOOKS UP AT CLOCK, 2:45.	
100.	MEDIUM-SHOT, BILL WORKING, FOREMAN WALKS BY AGAIN, CHECKING.	Here he comes again - - check, check, check.
101.	CLOSE-UP, BILL, FOREHEAD VERY DIRTY.	How long is this going to last? I'm sick and tired of this after only one year- - I can't do this the rest of my life. Boy, if I'd only listened
102.	CLOSE-UP, BILL'S FACE.	- - - (Narrator) Bill got himself into this situation because he didn't listen. People came around and talked about getting

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more education - - but none of his buddies or anyone at home said much about it - - so he didn't care. Now Bill understands what more education can do to get him off this dead end street. He realizes that he can wiggle his way out - - he's lost a year - - but its still not too late. There is no excuse for Bill to spend his life working at things he doesn't like. He can go to college or technical school and prepare himself for the kind of life and the kind of work that's best - - -

(TITLE: IS THIS WHAT YOU WANT?)

(Supered over Bill's face) (fade-out.)

Appendix E

Criterion Instruments

1. Preliminary 150 item form administered to 206 high school students.
2. Item analysis data. The "Item Number" refers to the number of the item on the preliminary form (1 above). The "Average Mean" is obtained by averaging the mean value of all responses of those individuals who scored in the highest fifty per cent (when the most desired response was given a value of 4, and the least desired response a value of 0, and the intermediate responses given respective values of 3, 2, and 1) and the mean value of all responses of those individuals who scored in the lowest fifty per cent on each item. The "Mean Difference Between Groups" was obtained by subtracting the mean of the low group from the mean of the high group on each item.
3. Final forms (A and B) used as criterion instruments in the study.

COLLEGE QUESTIONNAIRE*

*"College" for the purposes of this questionnaire means either a Junior College, Four Year College or Technical Institute. It does not mean a barber college, beauty, secretarial, or art school or any school which takes less than two years to complete.

Directions: There are not any right or wrong answers on this questionnaire. You do not even have to put your name on it. The purpose is to find out how high school students honestly feel, so don't encircle the answer you think others will, but rather encircle the one that best tells the way you really feel. Answer quickly and frankly, don't think about special cases, and Please Do Not Omit Any Item.

ALL YOU HAVE TO DO IS READ EACH OF THE STATEMENTS BELOW AND:

If you agree completely encircle the - - - SA (strongly agree)

If you agree in general but want to
change it a little - - - - - - - - - - - - a (agree)

If you neither agree nor disagree
encircle the - - - - - - - - - - - - - - - - N (neutral)

If you disagree in general but not
with everything - - - - - - - - - - - - - - d (disagree)

If you disagree completely encircle the- - SD (strongly disagree)

1. A person who goes to college will live a happier and more profitable life than a person who does not go to college.

2. It is better for one to work hard now to get a college education than regretting it when it is too late.

3. One does not need a college education for the essentials of life and these are all one should strive for.

4. A person who goes on to college has a better group from which to choose his mate in marriage.

5. Everyone should work a year or two before going to college.

6. Although a high school graduate can get a job now, this situation will almost completely change in the next few years.

7. If your parents have brainwashed you against going to college, then there's no use to try to go.

8. Although college costs a lot, it is more than worth it.

9. Marriage is so much more important to me than college right now that I'm not even considering college.

10. All a person really needs to get by on is an 8th grade education.

11. People who made fame and fortune without a college education are from an era of the past.

12. If your parents think that you can get a job right after high school, you'd probably better follow their advice.

13. For really top jobs, even 4 years of college is not enough.

14. If a person really wants to be independent, the best thing is to go on to college.

15. A person has an obligation to society to gain the highest degree of education that it's possible for him to get.

16. College is worthless unless you are a bookworm or going in a profession in which you are required to have it.

17. College is optional for women and essential for men.

18. A college education gives you bigger and better chances in the military service.

19. These days women are just as responsible as the men for the welfare of the family and need a college education just as much.

20. Although a college education will slow a person up momentarily, he will

end up ahead in the long run.

21. The cost of a college education is not worth the money.

22. Those people who feel the strongest toward a college education are the ones who succeed in life.

23. Twelve years of schooling is enough for anybody.

24. A college education is good insurance for your family in the years ahead.

25. A college education not only helps you but also your neighbors and your country.

26. If your interest is fast money, college is out.

27. A college education makes it possible for you to get along with people better and understand what they're talking about.

28. Students who get average grades in high school have no place in college.

29. College helps one to develop a better personality.

30. In order to have a really bright future, one must have a college education.

31. College gives you a feeling of independence that can be attained in no other way because no one can take your education away from you.

32. The unskilled laborer of tomorrow will have a tough job because machines will take his place.

33. There are all kinds of jobs for those who are educationally qualified for them.

34. College just spoils you for working afterwards.

35. The requirements to get into college are too rough for me.

36. There are lots of jobs for students just out of high school so why bother with a college education.

37. Getting a job after 35 is pretty tough, if you don't have a college education.

38. I don't think I qualify for college.

39. A trade or service job is just as satisfying as a professional job.

40. No one is really ready to stop learning when he graduates from high school.

41. I don't think a college education is worthwhile for me because I'm going to get married in a year or two anyway.

42. College is as important or necessary as you want to make it.

43. There will be many heartbreaking moments for the person who does not have a college education when he is turned down for jobs he really wants.

44. The world as one finds it is all the college I need.

45. Right now a college education is the most important thing in the world to me.

46. You have hardly anything to lose and almost everything to gain from a college education.

47. A person can get all the training he needs on the job.

48. I never really was interested in school and I never will be.

49. A person who has a college education is better fit both physically and mentally to cope with the problems of leading a life of his own.

50. A college education is not what it should be.

51. College gives one a chance to learn about life and to be independent of his family.

52. If you haven't decided on a vocation, you should still go to college to find out what is best for you.

53. All I want to do is to get out of school and get a job and be my own boss.

54. A college education is so important it should be required like high school.

55. Not having a college education could lead to problems in marriage in later life.

56. I know pretty well what I want to do after high school and it does not require college.

57. Going to college is a waste of time.

58. A lot of people have made a good life for themselves without a college education.

59. In this day one cannot expect to work at a job he enjoys and also get good money for it without a college education.

60. A college education is really only necessary for boys.

61. If I can get a job paying $3.50 an hour right out of high school, what more could anyone want.

62. College is only for those who have good high school records - - not for me.

63. College is necessary to know where you're going and what you want to do.

64. Some college education is beneficial for almost everyone.

65. One of the main purposes for going on to college is to find out what you want to be.

66. College teaches you many things you will never need to know.

67. A few years spent in college is certainly not very much compared with a lifetime of work.

68. If college is as bad as high school, I wouldn't be happy there.

69. The time and money that go into a college education are repaid many times over in later years.

70. A person is foolish to jump from high school to college.

71. Everyone ought to at least give college a chance.

72. Without a college education, it is almost impossible for a man to support a good-sized family decently.

73. If you want to be independent, the best way is to go out and work for awhile.

74. High school is only one step in your education.

75. College is a good idea but I just don't fit.

76. College is out for me because I just can't afford it.

77. Going to college is one of the best ways of growing up.

78. Many fewer people with a college education are out of work than those with only a high school diploma.

79. One doesn't have to put off getting married for four years just because of college.

80. You learn very little more in college than you do in high school.

81. You pay your money to go to college and once you're enrolled they don't care what happens to you.

82. I would feel cheated without a college education.

83. It's a hard old grind after you have to leave that soft college life.

84. Just the thought of spending four more stuffy years in a stale old classroom is the worst thing that could happen to me.

85. A person has a better chance of making more money if he starts young.

86. There is always some kind of a college which will meet the needs of your budget as well as your vocation.

87. College helps one very much in making a living and becoming a better citizen.

88. College is the best place to look for a husband because a girl can be learning while she is looking.

89. I don't feel that I have the ability to benefit from college.

90. If a person really has the ambition to get ahead, he can do it without a college education.

91. A college education is the most important part of your total education.

92. It is useless to waste four years of your life in college.

93. A college education puts you a step higher than your competitors when you apply for jobs.

94. There is nothing in college in the field of a career that I want bad enough to spend 4 or 5 years studying for.

95. A college education gives a person a chance to be happy and satisfied in his later life.

96. College is just a playground for those that aren't ready to go to work or for those who really don't know what they want to do.

97. I believe in living day by day and not worrying about tomorrow.

98. Going to college is the only way to be able to understand the world around us.

99. When I get out of high school I'll feel that I'm free and that I want to stay that way.

100. College is an essential factor in the development of a person.

101. College is just a place where you waste time at social gatherings.

102. A college education is essential in this day of specialization.

103. I hate school, hate teachers, hate to learn and I am not going on to college.

104. One shouldn't go to college unless he knows what he wants to be.

105. When you have gone to school for 12 years, it is best to rest for a year and see what life has in store for you.

106. By and large, the people who turn to crime are those without a college education.

107. A person is better off in the Army than in college.

108. The way colleges are set up today practically everyone can afford to go if he has the will to go.

109. It's foolish to think that anyone who doesn't go to college will never amount to anything.

110. After 4 years of high school, I know all I need to know for my life's plans.

111. I just can't afford a college education and there's no use striving for it.

112. The person who doesn't plan to go to college is not facing up to the facts about the demand for college trained people.

113. College is much better than spending your time at a job you don't like.

114. Most people don't realize the seriousness of the decision of not going on to college.

115. College is only for those who have real brains.

116. A person doesn't learn enough in high school to go out on his own.

117. A person with a college education better understands himself and the problems of the world.

118. My grades won't qualify me for college.

119. A high school diploma is little help when applying for a good job in competition with a college graduate.

120. College is for the birds.

121. Sooner or later almost all interesting jobs will be taken over by college trained people.

122. If your parents don't encourage you, it's no use to think of college.

123. Everyday more and more jobs require a college education.

124. One should fulfill his military obligations before considering a college education.

125. Not going to college nowadays is like not going to high school 15 or 20 years ago.

126. College is not worth the time it takes.

127. Almost everyone who has gone to college is glad that he did.

128. I do not like the kind of jobs for which college would qualify me.

129. It is better to be out working and making money than in college spending it.

130. College trained people are essential to prevent communism from infiltrating into our type of government.

131. If a person probably would be weeded out of college, it is hardly worth trying to make the effort to go.

132. The evidence shows that the person who goes on to college can secure a better job with more pay than the person without the college education.

133. College holds nothing for me.

134. Many people make it to the top without a college education.

135. I would rather pinch pennies and be hungry now than to be poorly paid and unhappy and a nearly destitute workman of the future.

136. There is so much more to life than just working that one should go to college to find out as much about it as possible.

137. College is all right for some, but marriage, service and immediate income are more important to me.

138. College is very difficult and really not worth the effort.

139. Everyone should try to improve himself as much as possible through a college education.

140. College is meant only for those people who want to be big shots.

141. One advantage of a college education is that you can work in a field of your choice.

142. College is o.k. only if your parents are important and have got connections.

143. I just couldn't bear to think of absorbing any more education.

144. Without college, progress in society, science and everything which

is vital to this country would be impossible.

145. If college is such a wonderful thing, why do they have to keep trying to get more students.

146. I don't really care if I go on to college.

147. College is only for big shots with a lot of money.

148. A college education always make a good person better.

149. I don't think I would like college well enough to make myself study.

150. A college education is the best thing for me.

Appendix E

(Continued)

2. Item Analysis Data

Item Analysis

Preliminary Form

Item Number	Average Mean	Mean Diff. Between Groups	Average Mean	Mean Diff. Between Groups
1-B	2.50	.48	2.26	1.05
2-B	3.48	.78	3.38	.67
3-*	2.93	.47	2.90	.65
4-*	1.83	.37	2.08	1.42
5-*	2.59	.22	2.68	.56
6-*	2.76	.39	2.64	.72
7-*	3.19	.39	3.31	.54
8-*	3.26	.13	3.25	1.11
9-A	3.29	.45	2.86	1.07
10-*	3.81	.07	3.80	.16
11-*	2.02	.56	1.80	.62
12-*	2.50	.34	2.71	.36
13-B	2.50	.66	2.22	.62
14-*	2.27	.32	2.22	1.05
15-*	2.26	.18	2.31	.99
16-B	3.26	.66	3.15	.90
17-*	2.70	.07	2.66	.39
18-*	2.85	.11	2.30	.19
19-*	2.28	.30	2.66	.82
20-B	3.21	.57	3.22	.67
21-A	3.30	.95	3.29	.77
22-*	2.03	.41	2.11	.51
23-B	2.83	.67	2.87	.68
24-A	3.02	.48	3.02	.89
25-B	2.99	.50	2.99	.93
26-*	2.22	0	1.95	.05
27-A	2.80	.65	2.77	.91
28-*	3.25	.25	3.00	.28
29-A	2.72	.78	2.56	.98
30-B	1.97	.83	1.53	.93
31-B	2.69	.43	2.70	.91
32-*	3.12	.46	2.98	.35
33-*	3.34	.31	3.24	.53
34-A	3.26	.78	3.27	.58
35-A	2.50	1.08	3.41	1.10
36-A	3.02	.82	2.94	1.32
37-B	2.43	.43	2.56	.91
38-B	2.45	1.57	2.28	1.36
39-A	1.91	.78	1.80	.82
40-*	3.22	.26	3.21	.50

A = Form A
B = Form B
* = Items Discarded

Item Analysis--continued

Preliminary Form

Item Number	Average Mean	Mean Diff. Between Groups	Average Mean	Mean Diff. Between Groups
41-A	3.16	.72	2.68	1.33
42-*	3.41	.48	3.55	.16
43-B	2.90	.62	2.82	.81
44-A	2.76	.70	2.76	1.28
45-B	2.19	1.27	1.85	1.52
46-A	3.14	.68	3.03	1.23
47-B	2.55	.43	2.52	1.00
48-A	2.94	.85	2.81	1.30
49-B	2.54	1.04	2.62	1.39
50-*	2.52	.30	2.49	.66
51-*	2.57	.35	2.62	.75
52-B	2.80	.65	2.65	1.07
53-B	2.74	1.04	2.89	1.41
54-B	1.79	1.37	1.49	1.05
55-A	1.84	.65	1.52	.96
56-B	2.43	1.13	2.03	1.98
57-A	3.38	.90	3.25	1.17
58-*	.78	.09	.94	.62
59-B	1.72	.63	1.92	.96
60-*	3.16	.24	3.15	.76
61-*	1.88	1.24	2.23	1.03
62-B	2.74	.82	2.53	.98
63-*	2.16	.20	2.17	.71
64-A	3.10	.65	3.02	.84
65-*	2.18	.33	2.15	.63
66-*	1.99	.39	2.35	.84
67-*	3.03	.20	2.87	.39
68-B	2.68	1.19	2.70	1.51
69-A	3.27	.58	3.18	1.03
70-A	3.17	.65	3.14	1.16
71-B	2.59	.59	2.30	1.17
72-A	1.80	.78	2.02	1.02
73-A	2.19	.57	2.11	1.07
74-A	3.05	.59	2.84	1.08
75-A	2.42	1.45	2.15	1.61
76-B	2.35	.89	2.15	1.19
77-B	2.51	1.02	2.60	1.29
78-*	2.88	.46	2.40	.31
79-*	2.58	.43	2.82	.14
80-B	3.27	.58	3.25	.75

A = Form A
B = Form B
* = Items Discarded

Item Analysis--continued

Preliminary Form

Item Number	Average Mean	Mean Diff. Between Groups	Average Mean	Mean Diff. Between Groups
81-A	2.84	.65	2.75	.77
82-B	1.94	1.33	1.88	1.63
83-*	2.62	.50	2.69	.16
84-B	2.68	1.37	2.70	1.48
85-A	2.31	.76	2.25	.47
86-A	2.96	.55	2.95	.79
87-B	3.15	.65	3.08	1.18
88-A	1.94	.45	2.01	.81
89-B	2.81	.85	2.61	1.16
90-A	1.77	1.02	1.79	1.03
91-A	2.62	.42	2.24	.99
92-B	3.22	.89	3.22	1.05
93-*	3.16	.63	2.27	.44
94-B	2.81	1.29	2.41	1.91
95-A	2.67	.91	2.64	1.38
96-A	2.99	.94	2.93	1.02
97-*	2.78	.35	3.11	.72
98-*	1.73	.28	1.73	.77
99-B	2.40	1.20	2.58	1.16
100-A	2.24	.95	2.29	.72
101-B	3.16	.67	3.14	.78
102-*	2.30	.52	2.43	.36
103-A	3.24	1.22	3.35	.98
104-B	2.72	.74	2.74	1.03
105-A	2.31	.81	2.36	1.18
106-B	2.40	.54	1.99	.82
107-*	2.73	.28	2.72	.75
108-*	2.64	.16	2.73	1.04
109-*	1.02	.08	1.03	.07
110-B	2.73	1.13	2.92	1.18
111-A	2.69	1.13	2.67	1.35
112-A	2.45	.65	2.22	1.00
113-*	3.06	.47	2.87	.58
114-B	2.82	.61	2.46	.83
115-A	2.83	1.07	2.83	.89
116-*	1.84	.39	1.68	.73
117-A	2.89	.78	2.77	1.20
118-*	2.42	.37	2.41	1.10
119-B	2.87	.70	3.01	.53
120-B	3.27	1.06	3.39	1.07

A = Form A
B = Form B
* = Items Discarded

Item Analysis--continued

Preliminary Form

Item Number	Average Mean	Mean Diff. Between Groups	Average Mean	Mean Diff. Between Groups
121-A	2.43	.65	2.42	1.20
122-*	3.18	.67	3.14	.51
123-*	3.30	.48	3.22	.62
124-A	2.30	1.17	2.37	.89
125-*	2.51	.42	2.34	.58
126-B	3.25	.90	3.16	1.07
127-B	3.03	.50	3.09	.89
128-B	2.93	.91	2.96	1.33
129-A	2.88	.98	2.86	1.44
130-*	2.34	.61	2.41	.54
131-B	2.69	1.13	2.40	1.16
132-A	3.06	1.21	2.90	1.11
133-A	3.04	1.17	2.68	1.86
134-*	1.32	.39	1.43	.82
135-B	2.64	.63	2.86	.84
136-B	2.80	.65	2.79	1.16
137-A	2.65	1.18	2.46	1.57
138-B	3.04	1.26	3.04	1.14
139-A	3.11	.44	2.78	1.05
140-B	3.12	.94	3.29	.91
141-*	3.51	.10	3.11	.72
142-A	3.21	.87	3.39	.83
143-A	3.04	1.00	2.98	1.44
144-*	2.67	.43	2.86	.89
145-*	2.38	.20	2.33	1.23
146-A	2.63	1.40	2.42	1.62
147-B	3.31	.85	3.37	.93
148-A	2.58	.79	2.49	1.26
149-B	2.42	.67	2.35	1.64
150-A	2.73	1.24	2.27	1.77

A = Form A
B = Form B
* = Items Discarded

3. A

COLLEGE QUESTIONNAIRE

"College" for the purpose of this questionnaire means either a Junior College, Four Year College or Technical Institute. It does not mean a barber college, beauty, secretarial, or art school or any school which takes less than two years to complete.

Directions: There are not any right or wrong answers on this questionnaire. The purpose is to find out how high school students honestly feel about college, so don't mark the answer you think others will, but rather mark the one that best tells the way you *really* feel. Answer quickly and frankly, don't think about special cases, and *Please Do Not Omit Any Item.*

All you have to do is read each of the statements below and:

If you agree completely mark the .... SA (strongly agree)
If you agree in general but want to change it a little .... a (agree)
If you neither agree nor disagree mark the .... N (neutral)
If you disagree in general but not with everything .... d (disagree)
If you disagree completely mark the .... SD (strongly disagree)

NAME ____ Last ____ First ____ Middle ____ SCORE ____ AGE ____ SEX ____

1. Marriage is so much more important to me than college right now that I'm not even considering college .... 1 SA a N d SD
2. The cost of a college education is not worth the money .... 2 SA a N d SD
3. A college education is good insurance for your family in the years ahead .... 3 SA a N d SD
4. A college education makes it possible for you to get along with people better and understand what they're talking about .... 4 SA a N d SD
5. College helps one to develop a better personality .... 5 SA a N d SD
6. College just spoils you for working afterwards 6 SA a N d SD
7. The requirements to get into college are too tough for me .... 7 SA a N d SD
8. There are lots of jobs for students just out of high school so why bother with a college education .... 8 SA a N d SD
9. A trade or service job is just as satisfying as a professional job .... 9 SA a N d SD
10. I don't think a college education is worthwhile for me because I'm going to get married in a year or two anyway .... 10 SA a N d SD

26. There is always some kind of a college which will meet the needs of your budget as well as your vocation .... 26 SA a N d SD
27. College is the best place to look for a husband because a girl can be learning while she is looking .... 27 SA a N d SD
28. If a person really has the ambition to get ahead, he can do it without a college education .... 28 SA a N d SD
29. A college education is the most important part of your total education .... 29 SA a N d SD
30. A college education gives a person a chance to be happy and satisfied in his later life .... 30 SA a N d SD
31. College is just a playground for those who aren't ready to go to work or for those who really don't care what they want to do .... 31 SA a N d SD
32. College is an essential factor in the development of a person 32 SA a N d SD
33. I hate school, hate teachers, hate to learn and I am not going on to college .... 33 SA a N d SD
34. When you have gone to school for 12 years, it is best to rest for a year and see what life has in store for you .... 34 SA a N d SD
35. I just can't afford a college education and there's no use striving for it .... 35 SA a N d SD

BE SURE YOUR MARKS ARE HEAVY AND BLACK.
ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.

11. The world as one finds it is all the college I need .... 11 SA a N d SD
12. You have hardly anything to lose and almost everything to gain from a college education .... 12 SA a N d SD
13. I never really was interested in school and I never will be .... 13 SA a N d SD
14. Not having a college education could lead to problems in marriage in later life .... 14 SA a N d SD
15. Going to college is a waste of time .... 15 SA a N d SD
16. If I can get a job paying $1.50 an hour right out of high school, what more could anyone want .... 16 SA a N d SD
17. Some college education is beneficial for almost everyone .... 17 SA a N d SD
18. The time and money that go into a college education are repaid many times over in later years .... 18 SA a N d SD
19. A person is foolish to jump from high school to college .... 19 SA a N d SD
20. Without a college education, it is almost impossible for a man to support a good-sized family decently .... 20 SA a N d SD
21. If you want to be independent, the best way is to go out and work for awhile .... 21 SA a N d SD
22. High school is only one step in your education 22 SA a N d SD
23. College is a good idea but I just don't fit .... 23 SA a N d SD
24. You pay your money to go to college and once you're enrolled they don't care what happens to you .... 24 SA a N d SD
25. A person has a better chance of making more money if he starts young .... 25 SA a N d SD

36. The person who doesn't plan to go to college is not facing up to the facts about the demand for college trained people 36 SA a N d SD
37. College is only for those who have real brains .... 37 SA a N d SD
38. A person with a college education better understands himself and the problems of the world .... 38 SA a N d SD
39. Sooner or later almost all interesting jobs will be taken over by college trained people .... 39 SA a N d SD
40. One should fulfill his military obligations before considering a college education .... 40 SA a N d SD
41. It is better to be out working and making money than in college spending it .... 41 SA a N d SD
42. The evidence shows that the person who goes on to college can secure a better job with more pay than the person without the college education .... 42 SA a N d SD
43. College holds nothing for me .... 43 SA a N d SD
44. College is all right for some, but marriage, service and immediate income are more important to me .... 44 SA a N d SD
45. Everyone should try to improve himself as much as possible through a college education .... 45 SA a N d SD
46. College is o.k. only if your parents are important and have got connections .... 46 SA a N d SD
47. I just couldn't bear to think of absorbing any more education .... 47 SA a N d SD
48. I don't really care if I go on to college .... 48 SA a N d SD
49. A college education always makes a good person better .... 49 SA a N d SD
50. A college education is the best thing for me .... 50 SA a N d SD

COLLEGE QUESTIONNAIRE

"College" for the purpose of this questionnaire means either a *Junior College, Four Year College* or *Technical Institute.* It does not mean a barber college, beauty, secretarial, or art school or any school which takes less than two years to complete.

Directions: There are not any right or wrong answers on this questionnaire. The purpose is to find out how high school students honestly feel about college, so don't mark the answer you think others will, but rather mark the one that best tells the way you *really* feel. *Answer quickly and frankly, don't think about special cases, and Please Do Not Omit Any Item.*

All you have to do is read each of the statements below and:

If you agree completely mark the .... SA (strongly agree)
If you agree in general but want to change it a little .... a (agree)
If you neither agree nor disagree mark the .... N (neutral)
If you disagree in general but not with everything .... d (disagree)
If you disagree completely mark the .... SD (strongly disagree)

NAME ____________
SEX ____________
AGE ____________
SCORE ____________

1. A person who goes to college will live a happier and more profitable life than a person who does not go to college .... SA a N d SD
2. It is better for one to work hard now to get a college education than regretting it when it is too late .... SA a N d SD
3. For really top jobs, even 4 years of college is not enough .... SA a N d SD
4. College is worthless unless you are a bookworm or going in a profession in which you are required to have it .... SA a N d SD
5. Although a college education will slow a person up economically, he will end up ahead in the long run .... SA a N d SD
6. Twelve years of schooling is enough for anybody .... SA a N d SD
7. A college education not only helps you but also your neighbors and your country .... SA a N d SD
8. In order to have a really bright future, one must have a college education .... SA a N d SD
9. College gives one a feeling of independence that can be attained in no other way because no one can take your education away from you .... SA a N d SD
10. Getting a job after 25 is pretty tough if you don't have a college education .... SA a N d SD

BE SURE YOUR MARKS ARE HEAVY AND BLACK.
ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.

11. I don't think I qualify for college .... SA a N d SD
12. After 4 years of high school, I know all I need to know for my life's plans .... SA a N d SD
13. Right now a college education is the most important thing in the world to me .... SA a N d SD
14. A person can get all the training he needs on the job .... SA a N d SD
15. A person who has a college education is better fit both physically and mentally to cope with the problems of leading a life of his own .... SA a N d SD
16. If you haven't decided on a vocation, you should still go to college to find out what is best for you .... SA a N d SD
17. All I want to do is to get out of school and get a job and be my own boss .... SA a N d SD
18. A college education is so important it should be required like high school .... SA a N d SD
19. I know pretty well what I want to do after high school and it does not require college .... SA a N d SD
20. In this day one cannot expect to work at a job he enjoys and also get good money for it without a college education .... SA a N d SD
21. College is only for those who have good high school records—not for me .... SA a N d SD
22. If college is as bad as high school, I wouldn't be happy there .... SA a N d SD
23. Everyone ought to at least give college a chance .... SA a N d SD
24. College is not for me because I just can't afford it .... SA a N d SD
25. Going to college is one of the best ways of growing up .... SA a N d SD
26. You learn very little more in college than you do in high school .... SA a N d SD
27. I would feel cheated without a college education .... SA a N d SD
28. Just the thought of spending four more study years in a stale old classroom is the worst thing that could happen to me .... SA a N d SD
29. College helps one very much in making a living and becoming a better citizen .... SA a N d SD
30. I don't feel that I have the ability to benefit from college .... SA a N d SD
31. It is useless to waste four years of your life in college .... SA a N d SD
32. There is nothing in college in the field of a career that I want bad enough to spend 4 or 5 years studying for .... SA a N d SD
33. When I get out of high school I'll feel that I'm free and that I want to stay that way .... SA a N d SD
34. College is just a place where you waste time at social gatherings .... SA a N d SD
35. One shouldn't go to college unless he knows what he wants to be .... SA a N d SD
36. By and large, the people who turn to crime are those without a college education .... SA a N d SD
37. There will be more heartbreaking moments for the person who does not have a college education when he is turned down for jobs he really wants .... SA a N d SD
38. Most people don't realize the seriousness of the decision of not going to college .... SA a N d SD
39. A high school diploma is little help when applying for a good job in comparison with a college graduate .... SA a N d SD
40. College is for the birds .... SA a N d SD
41. College is not worth the time it takes .... SA a N d SD
42. Almost everyone who has gone to college is glad that he did .... SA a N d SD
43. I do not like the kind of jobs for which college would qualify me .... SA a N d SD
44. If a person probably would be washed out of college, it is hardly worth trying to make the effort to go .... SA a N d SD
45. I would rather pinch pennies and be hungry now than to be poorly paid and unhappy and a nearly destitute workman of the future .... SA a N d SD
46. There is so much more to life than just working that one should go to college to find out as much about it as possible .... SA a N d SD
47. College is very difficult and really not worth the effort .... SA a N d SD
48. College is meant only for those people who want to be big shots .... SA a N d SD
49. College is only for big shots with a lot of money .... SA a N d SD
50. I don't think I would like college well enough to make myself study .... SA a N d SD

Appendix F

Results of Random Distribution of Treatments

The information given below is essential to properly interpret the tables on the following pages. Column 1 represents an arbitrary assignment of a number to the treatment described in the remaining three columns. It is this number which is used in the tables on the following pages to describe the treatments given in the various schools and classes. Column 2 indicates the pretest form administered, provided the treatment did not specify after-only testing. Column 3 indicates whether Film 1 or 2 was shown or if the group served as a control group. Column 4 indicates the form used in the post-test. In all instances the post-test is a different form than the pretest. The tables indicate the cities, dates, and number of classes receiving each treatment by school and grade level and a summary for all treatments for all schools.

Column 1	Column 2	Column 3	Column 4
Treatment Number	Pretest Form	Film	Post-test Form
1	A	None	B
2	B	None	A
3	None	None	A
4	None	None	B
5	A	1	B
6	B	1	A
7	A	2	B
8	B	2	A
9	None	1	A
10	None	1	B
11	None	2	A
12	None	2	B

NUMBER OF CLASSES RECEIVING EACH TREATMENT BY SCHOOL AND GRADE LEVEL

Salem, Oregon

Dates: Pretest - 2-20-61
Treatment - 2-22-61
Post-test - 2-24-61

Treatment Grade Level	1	2	3	4	5	6	7	8	9	10	11	12	Total
Sophomore	2	4	1	4	1	2	2	1	3	0	0	3	23
Junior	1	4	4	1	1	0	3	1	1	1	0	3	20
Senior	3	2	3	2	1	2	2	1	2	2	1	0	21
Total	6	10	8	7	3	4	7	3	6	3	1	6	64

Clackamas, Oregon

Dates: Pretest - 1-16-61
Treatment - 1-18-61
Post-test - 1-20-61

Treatment Grade Level	1	2	3	4	5	6	7	8	9	10	11	12	Total
Sophomore	1	1	3	0	0	0	1	1	0	0	0	3	10
Junior	0	2	0	0	0	0	2	2	0	0	0	2	8
Senior	1	1	1	1	0	0	0	2	0	0	1	1	8
Total	2	4	4	1	0	0	3	5	0	0	1	6	26

Milwaukie, Oregon

Dates: Pretest - 1-16-61
Treatment - 1-17-61
Post-test - 1-19-61

Treatment Grade Level	1	2	3	4	5	6	7	8	9	10	11	12	Total
Sophomore	2	1	1	1	0	2	0	1	0	2	0	0	10
Junior	1	1	1	3	0	1	0	0	0	1	1	0	9
Senior	1	1	0	2	2	1	0	0	2	0	1	0	10
Total	4	3	2	6	2	4	0	1	2	3	2	0	29

NUMBER OF CLASSES RECEIVING EACH TREATMENT BY SCHOOL AND GRADE LEVEL

Lebanon, Oregon

Dates: Pretest - 2-6-61
Treatment - 2-7-61
Post-test - 2-9-61

Treatment Grade Level	1	2	3	4	5	6	7	8	9	10	11	12	Total
Sophomore	2	0	1	1	1	1	0	1	1	0	1	0	9
Junior	2	0	1	1	0	1	1	1	0	0	2	0	9
Senior	2	0	2	0	1	0	0	2	0	0	1	1	9
Total	6	0	4	2	2	2	1	4	1	0	4	1	27

Woodburn, Oregon

Dates: Pretest - 1-30-61
Treatment - 1-31-61
Post-test - 2-2-61

Treatment Grade Level	1	2	3	4	5	6	7	8	9	10	11	12	Total
Sophomore	0	0	0	1	0	1	0	0	0	1	0	0	3
Junior	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior	0	1	0	1	1	2	0	0	0	1	0	0	6
Total	0	1	0	2	1	3	0	0	0	2	0	0	9

Monroe, Oregon

Dates: Pretest - 1-30-61
Treatment - 2-1-61
Post-test - 2-3-61

Treatment Grade Level	1	2	3	4	5	6	7	8	9	10	11	12	Total
Sophomore	0	0	0	0	0	0	0	2	0	0	0	0	2
Junior	1	0	0	0	0	0	0	0	0	0	0	0	1
Senior	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	1	0	1	0	0	0	0	2	0	0	0	0	4

NUMBER OF CLASSES RECEIVING EACH TREATMENT BY SCHOOL AND GRADE LEVEL

Harrisburg, Oregon
Dates: Pretest - 1-30-61
Treatment - 2-1-61
Post-test - 2-3-61

Treatment / Grade Level	1	2	3	4	5	6	7	8	9	10	11	12	Total
Sophomore	1	0	0	0	0	0	0	0	0	0	0	0	1
Junior	0	0	0	0	0	1	0	0	0	0	0	0	1
Senior	0	0	0	0	0	0	0	0	1	0	0	0	1
Total	1	0	0	0	0	1	0	0	1	0	0	0	3

SUMMARY

Number of Classes All Seven Schools Participating in Final Phases of the Study by Treatment and Grade Level

Treatment / Grade Level	1	2	3	4	5	6	7	8	9	10	11	12	Total
Sophomore	8	6	6	7	2	6	3	6	4	3	1	6	58
Junior	5	7	6	5	1	3	6	4	1	2	3	5	48
Senior	7	5	7	6	5	5	2	5	5	3	4	2	56
Total	20	18	19	18	8	14	11	15	10	8	8	13	162